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FLIGHT ENGINEER QUESTION BOOK

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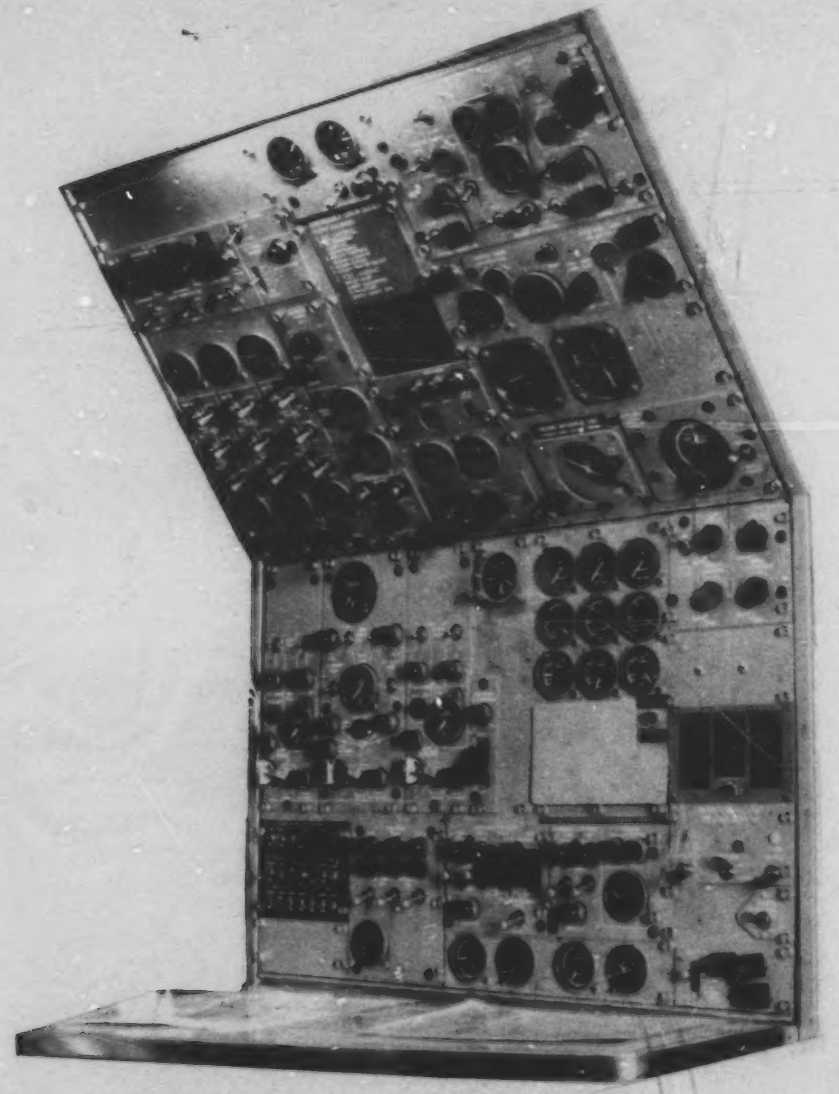

U.S. Department of Transportation
Federal Aviation Administration

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FLIGHT ENGINEER

QUESTION BOOK

1986

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Aviation Standards National Field Office

For sale by the Superintendent of Documents, U.S. Government Printing Office Washington, D.C. 20402

MAXIMUM TIME ALLOWED FOR TEST: 6 Hours

Materials to be used with this question book when used for airman testing:

1. Airman Written Test Application which includes the answer sheet.
2. Question Selection Sheet which identifies the questions to be answered.
3. Plastic overlay sheet which can be placed over performance charts for plotting purposes.

GENERAL INSTRUCTIONS FOR TAKING THE TEST

1. Read the instructions on page 1 of the Airman Written Test Application and complete page 4 of the form.

2. The question numbers in this question book are numbered consecutively beginning with No. 8001. Refer to the question selection sheet to determine which questions to answer.

3. For each item on the answer sheet, find the appropriate question in the book.

4. Mark your answer in the space provided for that item on the answer sheet.

5. Remember:

   Read each question carefully and avoid hasty assumptions. Do not answer until you understand the question. Do not spend too much time on any one question. Answer all of the questions that you readily know and then reconsider those you find difficult. Be careful to make necessary conversions when working with temperatures, speeds, and distances.

If a regulation or operations procedure is changed after this question book is printed, you will receive credit until the affected questions are revised.

THE MINIMUM PASSING GRADE IS 70.

WARNING

§ 61.37 Written tests: cheating or other unauthorized conduct.

(a) Except as authorized by the Administrator, no person may—

(1) Copy, or intentionally remove, a written test under this Part;

(2) Give to another, or receive from another, any part of copy of that test;

(3) Give help on that test to, or receive help on that test from, any person during the period that test is being given;

(4) Take any part of that test in behalf of another person;

(5) Use any material or aid during the period that test is being given; or

(6) Intentionally cause, assist, or participate in any act prohibited by this paragraph.

(b) No person whom the Administrator finds to have committed an act prohibited by paragraph (a) of this section is eligible for any airman or ground instructor certificate or rating, or to take any test therefor, under this chapter for a period of one year after the date of that act. In addition, the commission of that act is a basis for suspending or revoking any airman or ground instructor certificate or rating held by that person.

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PREFACE

This book was developed by the Federal Aviation Administration to be used by Federal Aviation Administration testing centers and Federal Aviation Administration designated written test examiners when administering the Flight Engineer written test. An applicant for a flight engineer certificate must pass a Basic Written Test and a Class Rating Written Test (of a combined test) appropriate to the class of aircraft on which a rating is desired.

Flight engineer applicants may use this book as a study guide. It is issued as FAA-T-8080-8A, Flight Engineer Question Book and is available from:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

or from U.S. Government Printing Office Bookstores located in major cities throughout the U.S.

The questions included in this publication are predicated on regulations, principles, and practices that were valid at the time of publication. The question selection sheets prepared for use with this question book are security items and are revised at frequent intervals.

The Federal Aviation Administration does not supply the correct answers to questions included in this book. Students should determine the answers by research and study, by working with instructors, or by attending ground schools. The Federal Aviation Administration is NOT responsible for either the content of commercial reprints of this book or the accuracy of the answers they may list.

Comments regarding this publication should be directed to:

U.S. Department of Transportation
Federal Aviation Administration
Aviation Standards National Field Office
Examinations Standards Branch, AVN-130
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FLIGHT ENGINEER QUESTION BOOK

INTRODUCTION

This book follows the new concept in presenting Federal Aviation Administration written tests to the applicants. Applicants for flight engineer certificates must pass a Basic Written Test and a Class Rating Written Test (or a Combined Test) appropriate to the class of aircraft on which a rating is desired.

The Flight Engineer Basic Written Test consists of items pertaining to:

Federal Aviation Regulations.
Theory of Flight and Elementary Aerodynamics.
Basic Meteorology with respect to engine operations.
Center of Gravity Computation.

The Class Rating Written Test consists of items pertaining to:

Airplane Systems and Equipment.
Powerplant Systems and Equipment.
Normal Operating Procedures.
Emergency Procedures.

The tests are based on aircraft which are used in the preponderance of initial flight engineer training by Civil United States Air Carriers. The aircraft are:

Boeing 727, Boeing 707, Douglas DC–8, Lockheed L–382, Lockheed L–188, and Douglas DC–6B.

Question selection sheets are used to administer the proper written test to each applicant. Each test is constructed from the questions included in Appendix I.

The planned revision cycle is 24 months for the question book and 12 months for the associated question selection sheets. Each question book and selection sheet is dated to indicate its expiration date.

THE WRITTEN TEST

Questions and Scoring

The test questions are of the multiple–choice type. Answers to questions listed on the question selection sheet should be marked on the answer sheet of AC Form 8080–3, Airman Written Test Application. Directions should be read carefully before beginning the test. Incomplete or erroneous personal information entered on this form delays the scoring process.

The answer sheet is sent to the Mike Monroney Aeronautical Center in Oklahoma City where it is scored by computer. Shortly thereafter AC Form 8080–2, Airman Written Test Report, is sent to the applicant listing the score and test questions missed.

When reporting for a practical test, the applicant must present this form and be prepared to discuss those questions missed. This form must also be presented when retesting is required in the event of a written test failure.

Taking the Test

The test may be taken at Federal Aviation Administration testing centers, Federal Aviation Administration written test examiner's facilities, or other designated places. After completing the test, the applicant must surrender the issued question book, question selection sheet, answer sheet, and any papers used for computations or notations, to the monitor before leaving the test room.

When taking the test, the applicant should keep the following points in mind:

1. Answer each question in accordance with the latest regulations and procedures.
2. Read each question carefully before looking at the possible answers. You should clearly understand the problem before attempting to solve it.
3. After formulating an answer, determine which of the alternatives most nearly corresponds with that answer. The answer chosen should completely resolve the problem.
4. From the answers given, it may appear that there is more than one possible answer; however, there is only one answer that is correct and complete. The other answers are either incomplete or are derived from popular misconceptions.
5. If a certain question is difficult for you, it is best to proceed to other questions. After the less difficult questions have been answered, return to those which gave you difficulty. Be sure to indicate on the question selection sheet the questions to which you wish to return.
6. When solving a computer problem, select the answer nearest your solution. The problem has been checked with various types of computers; therefore, if you have solved it correctly, your answer will be closer to the correct answer than to any of the other choices.
7. To aid in scoring, enter personal data in the appropriate spaces on the test answer sheet in a complete and legible manner. Enter the test number printed on the question selection sheet. An applicant who receives a failing grade must present the appropriate AC Form 8080–2 when appearing for re–examination.

NOTE: Blank spaces may appear on several pages of this publication. This permits referenced figures and tables to appear as close as possible to their related questions.

APPENDIX 1

BASIC

8001. Weight X Arm divided by the Reduction Factor is the formula used to determine

1—total moments.
2—CG from LEMAC.
3—index units.
4—CG station of the main gear.

8002. Which of the following weight factors determine ramp or taxi weight?

1—Zero fuel weight plus payload, fuel, and oil.
2—Payload plus operating weight.
3—Takeoff weight minus taxi fuel.
4—Zero fuel weight plus total fuel load.

8003. The payload of a transport aircraft consists of

1—passengers, baggage, and cargo only.
2—passengers, cargo, and fuel only.
3—crew, passengers, baggage, cargo, and fuel only.
4—all weights in excess of zero fuel weight.

8004. The term mean aerodynamic chord may be defined as the

1—distance from the leading edge to the trailing edge of the wing, measured at the wing root.
2—total lift of an airfoil divided by its mean chord.
3—ratio of the average wing chord to its aerodynamic center of pressure.
4—chord of an imaginary airfoil which has the same aerodynamic characteristics as the actual airfoil.

8005. The CG of an airplane is normally located in the fuselage at a point expressed in

1—percentage of MAC aft of the leading edge of the wing.
2—inches from the leading edge of the wing.
3—inches from the forward CG limit.
4—percent of mean aerodynamic chord aft of LEMAC.

8006. The basic operating weight of a transport airplane is the empty weight plus

1—required crew and standard operating items.
2—fuel and oil.
3—required crew.
4—fixed ballast, hydraulic fluid, undrainable fuel, and undrainable oil.

8007. What is a definition of zero fuel weight?

1—Basic operating weight plus maximum capacity of passengers and cargo.
2—Empty weight plus passengers and cargo.
3—Takeoff weight minus fuel to destination and alternate.
4—Basic operating weight plus payload.

8008. The maximum allowable aircraft weight, above which all of the load must consist of usable or dumpable fuel, is called

1—maximum payload weight.
2—maximum zero fuel weight.
3—maximum landing weight.
4—basic operating weight.

8009. Which conditions are most conducive to structural icing on the airframe and propeller?

1—Temperature –10° C to 0° C and relative humidity 85 percent or more.
2—Temperature –5° C to +10° C and frozen precipitation.
3—Temperature –15° C to 0° C with visible moisture.
4—Temperature 0° C to +15° C and relative humidity 85 percent or more.

8010. The relative humidity of the air is 100 percent. This is an indication that

1—the temperature and dew point are equal.
2—an inversion has formed.
3—precipitation (rain or snow) is occurring.
4—the vapor pressure is zero.

8011. Which statement is a definition of relative humidity?

1—The relative point at which the air, being cooled, becomes saturated.
2—The density of the water vapor in the air.
3—The ratio of actual water vapor in the air to the amount required for saturation.
4—The ratio of the pressure exerted by the water vapor in the air to the standard vapor pressure.

8012. Which of the following is an indication of the coldest atmospheric temperature?

1— –35° C ram air temperature.
2— –35° C total air temperature.
3— –35° C static air temperature.
4— –35° C ambient air temperature.

8013. Which of the following is true concerning the troposphere?

1—It is thicker over the equator than over the poles.
2—It is the dividing line between the stratosphere and the atmosphere.
3—It contains all the free oxygen of the atmosphere.
4—It extends to a uniform height at all latitudes.

8014. Which of the following is true concerning the tropopause?

1—The polar tropopause is at a higher altitude than the tropical tropopause.
2—The tropopause is the dividing line between the atmosphere and the stratosphere.
3—The tropopause is higher in the summer than in the winter.
4—Above the tropopause, the oxygen content of the air drops to approximately 2 percent.

8015. During a climb, the tropopause can be identified as the altitude where the

1—air density starts to increase as altitude increases.
2—atmospheric pressure becomes zero.
3—jet stream winds are encountered.
4—temperature lapse rate makes an abrupt change.

8016. An inversion can be identified by the

1—pressure lapse rate.
2—tropopause location.
3—temperature lapse rate.
4—jet stream location.

8017. The average altitude for one-half atmosphere pressure level (500 millibar) is

1—10,000 ft.
2—13,000 ft.
3—18,000 ft.
4—25,000 ft.

8018. What is the relationship between altitudes when the altimeter setting is higher than standard while flying at 15,000 ft. indicated altitude?

1—Indicated altitude is higher than pressure altitude.
2—Indicated altitude is lower than true altitude.
3—Indicated altitude is lower than pressure altitude.
4—Indicated altitude is higher than true altitude.

8019. To obtain pressure altitude during flight, adjust the altimeter to

1—29.92 and read pressure altitude directly from the altimeter.
2—the current altimeter setting and read pressure altitude directly from the altimeter.
3—the current altimeter setting and adjust the indicated altitude with the correction factor from a pressure altitude table.
4—29.92 and correct the indicated altitude for temperature.

8020. Without the use of supplemental oxygen, crewmembers and passengers would suffer from hypoxia in high altitude unpressurized flight. This problem occurs because as altitude is increased,

1—nitrogen in the atmosphere and in the bloodstream expands.
2—the percentage of oxygen in the atmosphere is decreased.
3—the percentage of nitrogen in the atmosphere is increased.
4—oxygen partial pressure is decreased.

8021. The authorized maximum takeoff weight of a transport airplane, when less than the maximum certificated weight, is a factor which

1—varies with runway length, airport elevation, and ambient temperature.
2—may not be more than 105 percent of the maximum landing weight.
3—is the sum total of the maximum zero fuel weight and the maximum allowable fuel load.
4—may be increased by headwind components and higher than normal temperature.

8022. An airplane is climbing at Mach .78 during an en route climb. In this case, the true airspeed would

1—remain the same throughout the climb.
2—increase as pressure decreases.
3—increase with altitude.
4—decrease as the temperature decreases.

8023. An airplane is descending at a constant Mach .6. What would occur regarding the true airspeed?

1—Remain constant.
2—Decrease as pressure increases.
3—Decrease as altitude decreases.
4—Increase as temperature increases.

8024. How is true airspeed determined?

1—Correcting EAS for density altitude error.
2—Correcting CAS for instrument and position error.
3—Correcting IAS for compressibility.
4—Correcting IAS for density altitude error.

8025. Takeoff speed limits (V_1, V_R, and V_2) contained in performance charts and tables of the airplane flight manual, are to be observed on the captain's airspeed indicator. These speeds are classified as

1—equivalent airspeeds.
2—indicated airspeeds.
3—true airspeeds.
4—corrected airspeeds.

8026. Which factor has the effect of reducing takeoff decision speed (IAS)?

1—High density altitude.
2—High gross weight.
3—Dry runway with uphill slope.
4—Slush on runway.

8027. Which factor has the effect of increasing V_1 speed?

1—Downhill runway slope.
2—High takeoff gross weight.
3—Dry, cold air.
4—Slush or standing water on the runway.

8028. What is a characteristic of the constant Mach cruise control procedure?

1—Thrust is reduced as aircraft weight decreases.
2—True airspeed decreases as OAT increases.
3—EPR is increased as OAT increases.
4—EPR is increased as aircraft weight decreases.

8029. Variations in V_{REF} for a particular airplane are primarily a function of

1—landing weight.
2—takeoff weight, wind component, and runway length.
3—number of engines operating and flap configuration.
4—gross weight, pressure altitude, and ambient temperature.

8030. Variations in 1.3 V_{SO} for a particular airplane are primarily a function of

1—takeoff weight, wind component, and runway length.
2—landing weight.
3—number of engines operating and flap configuration.
4—gross weight, pressure altitude, and ambient temperature.

8031. The landing speed, in terms of TAS, for a particular weight and configuration of the aircraft will

1—increase as relative humidity is decreased.
2—increase as altitude is increased.
3—remain constant regardless of altitude.
4—decrease as atmospheric pressure is decreased.

8032. An airplane is flying at a constant flight level and at a power schedule which produces maximum air miles per pound of fuel. In this event, as the weight of the airplane reduces, engine power setting or fuel flow is

1—held constant to simplify fuel consumption computations.
2—reduced to maintain the best constant airspeed.
3—reduced to maintain the best L/D ratio flight conditions.
4—increased to allow flight at maximum efficient airspeed relative to tailplane drag.

8033. The ratio of nautical miles per hour to fuel flow in pounds per hour identifies which item relating to airplane performance?

1—Specific fuel consumption.
2—Specific fuel flow.
3—Specific range.
4—Specific endurance.

8034. Which flight condition of a large jet airplane creates the most severe flight hazard by generating wingtip vortices of the greatest strength?

1—Heavy, slow, gear and flaps up.
2—Heavy, slow, gear and flaps down.
3—Heavy, fast, gear and flaps up.
4—Heavy, fast, gear and flaps down.

8035. Wingtip vortices which trail behind airplanes in flight are caused by the

1—pressure differential existing between the upper and lower surfaces of the wings.
2—axial flow or jetwash from turbine-driven airplanes.
3—propwash, or jetwash, depending on the type and speed of the airplane.
4—slipstream or propwash of propeller-driven airplanes.

8036. Compared to a no-wind condition, what effect would a 20-knot headwind component have upon takeoff performance?

1—Actual groundspeed at rotation will be greater than V_R.
2—The airplane will reach critical engine failure indicated airspeed at a lower groundspeed.
3—Critical engine failure speed and actual groundspeed will be the same as in a zero-wind condition.
4—The effect of wind on initial acceleration will result in a longer takeoff roll.

8037. While flying in a steady wind of 25 knots, the airplane is turned from a direct headwind to a direct tailwind. The indicated airspeed would

1—remain the same but the groundspeed would increase 50 knots.
2—increase 25 knots and the groundspeed would increase 25 knots.
3—decrease 25 knots and the groundspeed would increase 25 knots.
4—increase 50 knots and the groundspeed would increase 25 knots.

8038. Critical Mach number means the

1—speed at which there is supersonic airflow over all parts of the aircraft.
2—speed at which the aircraft starts to tuck or buffet.
3—highest flight speed without supersonic flow over any part of the aircraft.
4—highest speed at which the aircraft is certificated for operation.

8039. Mach number is commonly defined as the

1—ratio of equivalent airspeed to the speed of sound.
2—speed of sound under conditions of standard pressure and temperature.
3—calibrated airspeed corrected for position and instrument error.
4—ratio of true airspeed to the speed of sound.

8040. The true airspeed at which an airplane stalls varies with

1—load factor, weight, and density altitude.
2—load factor and angle of attack.
3—density altitude, weight, and angle of attack.
4—groundspeed, load factor, and density altitude.

8041. The angle of attack at which an airplane stalls

1—decreases with an increase in engine power.
2—remains constant regardless of gross weight.
3—increases with an increase in engine power.
4—varies with gross weight and density altitude.

8042. Which has the effect of increasing load factor?

1—Vertical gusts.
2—Increased airplane weight.
3—Increased air density.
4—Rearward CG location.

8043. In comparing a straight wing and a sweptback wing of the same wing area and wing loading, the sweptback wing has the advantage of

1—lower stalling speed.
2—greater mean aerodynamic chord.
3—increased longitudinal stability.
4—higher critical Mach number.

8044. The use of a slot in the leading edge of the wing enables the airplane to land at a slower speed because it

1—changes the camber of the wing.
2—increases the ground effect.
3—decelerates the upper surface boundary layer air.
4—delays the stall to a higher angle of attack.

8045. The trimming devices on a particular airplane include trailing edge tabs on the rudder and ailerons. If the airplane is trimmed to a more nose-right and right wing-up position, the right aileron trim tab will move

1—up and the rudder tab will move to the left.
2—down and the rudder tab will move to the left.
3—up and the rudder tab will move to the right.
4—down and the rudder tab will move to the right.

8046. The trimming devices on a particular airplane include trailing edge tabs on the rudder and a movable horizontal stabilizer. If the airplane is trimmed to a more nosedown and nose left position, the stabilizer leading edge will move

1—down and the rudder tab will move to the right.
2—down and the rudder tab will move to the left.
3—up and the rudder tab will move to the right.
4—up and the rudder tab will move to the left.

8047. The angle of attack which produces the highest lift/drag ratio

1—remains constant as weight is changed, but decreases as altitude is increased.
2—increases as weight or altitude is increased.
3—remains constant as altitude is changed, but decreases as weight is reduced.
4—remains constant regardless of weight or altitude.

8048. Which factors are used to define the angle of attack of an airfoil?

1—Chord line of the airfoil and the horizon.
2—Bottom surface of the wing and the flightpath.
3—Mean chord of the airfoil and the relative wind.
4—Relative wind and chord line.

8049. During a coordinated turn in level flight at a constant airspeed, centrifugal force is counterbalanced by

1—the weight of the airplane.
2—the coordinated use of rudder control.
3—the increased speed of the high wing and decreased speed of the low wing.
4—a portion of the lift of the wing.

8050. Which relationship is true at constant airspeed in level flight?

1—Lift equals total drag.
2—Lift exceeds airplane weight.
3—Drag equals total engine power output.
4—Thrust equals drag.

8051. Which factor causes the decreased pressure on the upper surface of the wing?

1—The curvature of the upper surface causes the air to burble and break away from the upper surface, leaving an area of lower pressure.
2—The curvature of the upper surface of the wing tends to deflect the air away from the upper surface, thereby decreasing the pressure on the upper surface.
3—Air flowing over the upper surface of the wing travels faster than the air passing beneath the wing.
4—Air flowing over the upper surface of the wing travels at a slower speed than the air beneath the surface of the wing due to the drag caused by the curvature of the upper surface.

8052. Under what conditions must a flight engineer's crewmember certificate be surrendered to the FAA for cancellation?

1—Each year when the flight engineer takes a recurrent flight check.
2—At each renewal of the flight engineer's medical certificate.
3—Upon termination of employment with the air carrier.
4—When the flight engineer is reassigned to duty as a pilot, second in command.

8053. A crewmember certificate may be issued by the FAA to flight crewmembers on U.S. registered aircraft engaged in

1—intrastate operations only.
2—supplemental air carrier operations.
3—flight crewmember training only.
4—international air commerce.

8054. Which documents are required to be carried aboard each domestic air carrier flight conducted under FAR Part 121?

1—Maintenance release, weight and balance release, and flight plan.
2—Dispatch release, load manifest, and flight plan.
3—Dispatch release and weight and balance release.
4—Load manifest and flight release.

8055. Among the required items of information on the dispatch release of a domestic air carrier is the

1—name of the pilot in command.
2—weight and balance data.
3—airplane make and model.
4—minimum fuel supply.

8056. The required fuel supply for a flag air carrier turbopropeller-powered airplane consists of fuel to fly to destination and to hold at the alternate (if specified) before landing. What type holding operation is planned in the fuel supply calculations?

1—45 minutes at traffic pattern altitude.
2—30 minutes at the most economical altitude regarding fuel consumption at holding speed.
3—45 minutes at minimum holding altitude.
4—30 minutes plus 15 percent of ETE, but not more than 90 minutes.

8057. The reserve fuel supply for a domestic air carrier flight in a propeller-driven aircraft shall be enough fuel for

1—30 minutes at normal cruising fuel consumption.
2—45 minutes at holding fuel consumption; 1,500 ft. above the alternate airport.
3—45 minutes at normal cruising fuel consumption.
4—30 minutes at holding fuel consumption; 1,500 ft. above the destination or alternate airport.

8058. The reserve fuel supply required for a domestic air carrier flight in a turbojet-powered airplane is

1—30 minutes at holding fuel consumption; 1,500 ft. above the destination or alternate airport.
2—45 minutes at normal fuel consumption.
3—30 minutes at normal fuel consumption.
4—45 minutes at holding fuel consumption; 1,500 ft. above the destination or alternate airport.

8059. The function of the minimum equipment list is to indicate required items which

1—cannot be missing from the aircraft for any air carrier flight.
2—are required to be operative when the aircraft is used on domestic passenger scheduled flights.
3—may be inoperative while permitting a ferry flight to a maintenance terminal.
4—may be inoperative for a flight beyond a terminal point.

8060. Which rule applies when a passenger is seated in the cabin of an all-cargo aircraft?

1—The passenger must have a seat reserved on the flight deck.
2—The pilot in command may authorize the passenger to be admitted to the crew compartment.
3—The passenger must remain seated with seatbelt fastened at all times during flight.
4—Crew-type oxygen equipment must be provided for the passenger.

8061. Which passenger announcement must be made after each takeoff?

1—The location and use of emergency exits.
2—To keep seatbelts fastened while seated.
3—How to use the passenger oxygen system in an emergency.
4—How to don and inflate a life preserver.

8062. In addition to the required oral briefing before each takeoff, what other information must be made available on printed cards to each passenger?

1—Rules about smoking during flight.
2—Diagrams and methods of operating the emergency exits.
3—Rules concerning the consumption of alcoholic beverages.
4—The procedure for administering first aid oxygen.

8063. Who is responsible for entry into the maintenance log of any in-flight mechanical irregularity that is noted by the flight engineer?

1—The pilot in command.
2—The flight engineer.
3—Equal responsibility between the pilot in command and the flight engineer.
4—The air carrier or its delegates.

8064. Each crewmember shall have available for individual use on each flight a

1—pyrotechnic signaling device.
2—quick-donning oxygen mask.
3—hand fire extinguisher suitable for combatting Class A, B, and C fires.
4—flashlight in good working order.

8065. The pilot in command has emergency authority to exclude people from the flight deck. Those who may be excluded from this area include

1—anyone except an FAA air carrier inspector.
2—anyone except a federal law enforcement officer who presents proper credentials.
3—any person, in the interest of safety.
4—all persons except those specifically designated by the certificate holder as essential crewmembers.

8066. The flight engineer is required by regulations to be at the flight engineer station

1—only during takeoff and landing.
2—at all times unless absence is necessary in the performance of flight engineer duties, or to meet physiological needs.
3—during takeoff and landing, but may be relieved by one of the pilots during cruising flight.
4—only during takeoff and landing and during emergencies.

8067. During which part of the flight must the flight engineer keep the required seatbelt fastened?

1—At all times during flight.
2—During the entire time when seated at the flight engineer station.
3—Only during the time the "Fasten Seatbelt" sign is on.
4—Only during takeoff, landing, and when in turbulent air.

8068. Which flight crewmembers may leave their station during cruising flight to perform normal duties?

1—One pilot and the flight engineer together when required.
2—Either pilot but not the flight engineer.
3—One pilot or the flight engineer if the flight engineer station is occupied by a pilot.
4—Either pilot or the flight engineer, but only one crewmember at a time.

8069. In flag air carrier operations (overseas) where the flightcrew consists of two pilots and one flight engineer, the engineer may not be scheduled for more than

1—8 hours in any 24 consecutive hours.
2—30 hours during any 7 days.
3—300 hours in any 90 consecutive days.
4—100 hours in any 30 consecutive days.

8070. Which is a flight time limitation for a flight engineer on a flag air carrier where only one engineer is required?

1—120 hours during any 30 consecutive days.
2—300 hours during any 60 consecutive days.
3—300 hours during any 120-day period.
4—900 hours during any 12-calendar month period.

8071. Duty and rest period rules for domestic air carrier operations require that a flight crewmember

1—not be assigned to any duty with the air carrier during a required rest period.
2—not be on duty aloft for more than 90 hours in any calendar month.
3—be relieved of all duty for at least 48 hours during any 7 consecutive days.
4—not be assigned to any duty for a period of at least 18 hours if the flight crewmember had been on duty aloft for 9 hours.

8072. How long a rest period is required for a flight engineer who is scheduled for more than 8 hours' duty aloft within 24 consecutive hours on a domestic carrier?

1—8 hours.
2—Twice the number of hours of duty aloft, but not less than 8 hours.
3—16 hours.
4—Twice the number of total duty hours (ground and aloft), but not less than 8 hours.

8073. What is the limitation regarding time spent by a flight engineer in deadhead air transportation returning to the home station?

1—Cannot be considered part of the engineer's required rest period.
2—Must be considered part of the engineer's duty aloft.
3—Is considered part of the engineer's total commercial flying.
4—May be considered when determining the engineer's annual flight time requirement.

8074. Which is a flight time limitation for a flight engineer on a domestic air carrier according to FAR Part 121?

1—30 hours in any calendar week.
2—32 hours in any 7 consecutive days.
3—100 hours in any 30 consecutive days.
4—100 hours in any calendar month.

8075. Flight time limitations for domestic air carrier operations require that a flight engineer be

1—limited to a maximum of 1,200 hours duty aloft in any calendar year.
2—limited to a maximum of 40 hours aloft in any 7 consecutive days.
3—relieved of all duty for at least 24 consecutive hours in any 7 consecutive days.
4—relieved of all duty for at least 48 consecutive hours in any 7 consecutive days.

8076. Which requirement must be met by all flight engineers every 6 months before they can serve on an air carrier flight under FAR Part 121?

1—Upgrade training.
2—50 hours of flight time or a flight check.
3—Line check or route check.
4—Recurrent flight and ground training.

8077. A flight engineer must receive recurrent training on emergency procedures at least once each

1—6 calendar months.
2—12 calendar months.
3—18 calendar months.
4—24 calendar months.

8078. During what preceding time period must a crewmember have completed an established training program in order to perform duties associated with the handling and carriage of dangerous articles and magnetized materials?

1—6 months.
2—12 calendar months.
3—18 calendar months.
4—24 months.

8079. The flight engineer must perform, as part of emergency training, drills utilizing the proper equipment and procedure concerning

1—operation and use of emergency exit and evacuation chutes.
2—emergency descent.
3—discharge of fire extinguishers in engine nacelles.
4—dumping of fuel down to undumpable fuel level.

8080. The air carrier must give instruction on such subjects as respiration, hypoxia, and decompression to each crewmember on pressurized airplanes operated above

1—10,000 ft.
2—20,000 ft.
3—12,000 ft.
4—25,000 ft.

8081. A drill which the flight engineer must perform as a part of emergency training, is one utilizing the proper equipment and procedures concerning

1—fire extinguishing and smoke control.
2—abnormal situations, such as hijacking.
3—emergency descent following rapid decompression.
4—emergency dumping of fuel.

8082. What is the term for the training required for flight crewmembers who have qualified and served in the same capacity on another airplane of the same group (e.g., turbojet-powered)?

1—Transition training.
2—Differences training.
3—Upgrade training.
4—Programmed training.

8083. What is the term for the training required for flight crewmembers who have qualified and served on a particular type airplane (e.g., Boeing 727-100) before they may serve in the same capacity on a particular variation of that airplane?

1—Programmed training.
2—Transition training.
3—Upgrade training.
4—Differences training.

8084. What is the term for the training required for flight crewmembers who have not qualified and served in the same capacity on another airplane of the same group (e.g., turbojet-powered)?

1—Upgrade training.
2—Transition training.
3—Primary training.
4—Initial training.

8085. Crewmembers who have served as a flight engineer on a particular type airplane (e.g., Lockheed L-188C), may serve as second in command upon completing which training program?

1—Differences training.
2—Recurrent training.
3—Transition training.
4—Upgrade training.

8086. Crewmembers who have served as flight engineer on a particular type airplane (e.g., Boeing 727-100), may serve as second in command upon completing which training program?

1—Upgrade training.
2—Recurrent training.
3—Transition training.
4—Differences training.

8087. If a flight engineer is a required flight crewmember of an airplane, which of the following is true regarding flight engineer emergency evacuation duties?

1—Flight engineer emergency evacuation duties must be described in the air carrier's Flight Operations Manual.
2—A flight engineer must receive recurrent emergency evacuation training each 6 months.
3—Flight engineer emergency evacuation duties must include the opening of all emergency exits.
4—The flight engineer must demonstrate the ability to accomplish emergency evacuation functions, in an airplane or simulator, at least once each 6 months.

8088. Under which condition is a flight engineer required as a flight crewmember on a turbojet airplane used in FAR Part 121 operations?

1—If the airplane is carrying passengers or live cargo.
2—If the airplane's takeoff weight is above 80,000 lb.
3—If the airplane is powered by more than two engines.
4—If required by the airplane's type certificate.

8089. If the flight engineer becomes incapacitated, who may perform flight engineer duties during an IFR flight conducted under FAR Part 121?

1—A pilot crewmember but only if flight engineer certificated.
2—The pilot second in command only.
3—Any crewmember designated by the pilot in command.
4—Either pilot but only if qualified to perform flight engineer functions.

8090. On each air carrier flight requiring a flight engineer, at least one flight crewmember, other than the flight engineer, must be qualified to provide emergency performance of the flight engineer's functions. This flight crewmember

1—must have flown 50 hours, as a flight engineer, within the past 6 months.
2—is not required to have a flight engineer's certificate.
3—must be the pilot in command to perform flight engineer functions.
4—must have a flight engineer's certificate.

8091. Which aircraft are required to be equipped with a ground proximity warning glide slope deviation alerting system?

1—All transport category aircraft.
2—Large turbojet-powered airplanes only.
3—Passenger-carrying aircraft only.
4—Large turbine-powered airplanes only.

8092. The information recorded by a required cockpit voice recorder may be erased or otherwise obliterated no sooner than

1—15 minutes after recording.
2—30 minutes after recording.
3—48 hours after the end of the flight.
4—60 days after the end of the flight.

8093. Cockpit voice recorders shall be operated from the start of

1—the before-starting check to the end of the secure-cockpit check.
2—the before-takeoff check to the end of the after-landing check.
3—the takeoff roll to the end of the landing roll.
4—departure from the ramp to the next full stop at a ramp.

8094. Which factors must be recorded by the approved flight recorder?

1—Airspeed, time, altitude, vertical acceleration, and heading.
2—Time, true altitude, calibrated airspeed, vertical speed, and heading.
3—Elapsed time, airspeed, altitude, vertical acceleration, and magnetic course.
4—Calibrated airspeed, time, pressure altitude, vertical acceleration or deceleration, and true course.

8095. A passenger aircraft is cruising at FL390 and all flight crewmember stations are provided with approved quick-donning type oxygen masks. Under which conditions must a flight crewmember put on and use an oxygen mask?

1—When the flight engineer leaves the flight engineer station, one pilot must use a mask.
2—When the captain leaves the left seat, the other pilot and flight engineer must use their masks.
3—When one pilot leaves the flight deck, the other pilot must use a mask but other crewmembers need not.
4—When any flight crewmember leaves the flight deck, all other flight crewmembers must use their masks.

8096. When cruising at FL350, which rule applies to the flight engineer's supplemental oxygen equipment?

1—The mask must be worn at all altitudes above FL250.
2—The oxygen regulator must be set to the 100 percent position.
3—The mask must be located within immediate reach of the flight engineer's duty station.
4—The mask must be worn if one pilot leaves the flight deck.

8097. How much supplemental oxygen must pressurized air carrier transport airplanes carry for each flight crewmember on flight deck duty when operating at flight altitudes above 10,000 ft.?

1—A minimum of 30-minutes' supply.
2—A minimum of 2-hours' supply.
3—Sufficient for the duration of the flight above 6,000 ft. cabin pressure altitude.
4—Sufficient for the duration of the flight above 8,000 ft. flight altitude.

8098. Each air carrier flight deck crewmember on flight deck duty must be provided with a quick-donning type oxygen mask when operating at flight altitudes above

1—FL120.
2—FL180.
3—FL200.
4—FL250.

8099. The supplemental oxygen requirements for passengers when a flight is operated up to FL250 is dependent upon the airplane's ability to make an emergency descent to a flight altitude of

1—10,000 ft. within 4 minutes.
2—12,000 ft. within 4 minutes or at a minimum rate of 2,500 FPM, whichever is quicker.
3—8,000 ft. at a minimum rate of 3,000 FPM.
4—14,000 ft. within 4 minutes.

8100. A flight engineer on flight deck duty must use supplementary oxygen

1—when the aircraft is above FL250 regardless of the cabin altitude.
2—during night flight when the cabin altitude is above 8,000 ft.
3—after the cabin altitude has been between 10,000 and 12,000 ft. for 30 minutes.
4—when the cabin altitude is 10,000 ft. or more.

8101. If either pilot of an air carrier airplane leaves the duty station while flying at FL310, the other pilot

1—shall put on and use an oxygen mask.
2—must have a quick-donning type oxygen mask available.
3—and the flight engineer shall put on and use their oxygen masks.
4—must select emergency oxygen and put on an oxygen mask.

8102. Above which cabin altitude must oxygen be provided for all persons during the entire flight?

1—All crewmembers 10,000 ft.; all passengers 12,000 ft.
2—All crewmembers 12,000 ft.; all passengers 15,000 ft.
3—All crewmembers 14,000 ft.; all passengers 14,000 ft.
4—All crewmembers 10,000 ft.; all passengers 15,000 ft.

8103. Which item of required night-flying lighting equipment may also be required to have a means of controlling the intensity of illumination?

1—Landing lights.
2—Anticollision lights.
3—Instrument lights.
4—Position lights.

8104. Which event must cause the lighting of interior emergency exit lights?

1—Opening of the emergency exit.
2—Actuation of the emergency exit equipment.
3—Interruption of the airplane's normal electric power.
4—Interruption of the airplane's emergency electric power.

8105. If there is a required emergency exit located in the flightcrew compartment, the door which separates the compartment from the passenger cabin shall

1—not be locked during flight.
2—be locked at all times except during emergency landings.
3—be locked at all times except during any emergency declared by the pilot in command.
4—not be locked during takeoff and landing.

8106. Interior emergency exit lights should be checked for operation. Federal Aviation Regulations require that these lights must

1—operate automatically when subjected to a negative G load.
2—be operable manually from the flightcrew station and the passenger compartment.
3—be armed or turned on during ground operation and all flight operations.
4—be operable from the flight deck only.

8107. Interior emergency lights must be armed or turned on during

1—ramp operations, taxiing, and takeoff.
2—takeoff, landing, and turbulent air operations.
3—descents, landings, and during emergency descents.
4—taxiing, takeoff, and landing.

8108. Where should the portable battery-powered megaphone be located if only one is required on a passenger-carrying airplane?

1—The most rearward location in the passenger cabin.
2—The most forward location in the passenger cabin.
3—In the passenger cabin near the overwing emergency exit.
4—On the flight deck, readily accessible to the flight crewmembers.

8109. During preflight inspection, the flight engineer finds that one hand fire extinguisher is missing in the passenger cabin. Which factor determines the minimum number of hand fire extinguishers required for flight under FAR Part 121?

1—Number of passengers aboard.
2—Number of required crewmembers.
3—Number of installed passenger seats.
4—Type of cabin wall lining and upholstery material.

8110. How many portable battery-powered megaphones are required on an air carrier airplane with a seating capacity of 150 passengers on a trip segment when 75 passengers are carried? (FAR Part 121)

1—Two; one located near or accessible to the flightcrew, and one located near the center of the passenger cabin.
2—One at the most rearward location in the passenger cabin.
3—One located near the center of the passenger cabin.
4—Two; one at the forward end, and the other at the most rearward location of the passenger cabin.

8111. An airplane used in domestic air carrier operations has a seating capacity for 65 passengers. What is the minimum number of fire extinguishers and megaphones which must be located in the cabin when 55 passengers are carried? (FAR Part 121)

1—Two hand fire extinguishers and two megaphones.
2—One hand fire extinguisher and two megaphones.
3—Two hand fire extinguisher and one megaphone.
4—Three hand fire extinguishers and one megaphone.

8112. On airplanes requiring a third gyroscopic bank-and-pitch indicator, which is a requirement with regard to the instrument or system's operation?

1—Operation must be dependent on the captain's attitude indicating system.
2—The power source must provide reliable operation for 30 minutes after total failure of the electrical generating system.
3—The power source must be manually selected to prevent an inadvertent failure during an automatic power transfer.
4—The power source must provide reliable operation for the duration of the flight after failure of the alternating current electrical system.

8113. On large turbojet aircraft, a third artificial horizon indicating system must be installed. Which is an operational requirement of this system?

1—It must be powered from the main electrical generating system.
2—Operation must be in conjunction with one of the other attitude indicating systems.
3—Reliable indication must be presented for 15 minutes after its source of power fails.
4—It must be operational without selection after failure of the electrical generating system.

8114. The calibration of each airspeed indicator, each airspeed limitation, and each item of related information in the airplane flight manual or on pertinent placards must be expressed in

1—equivalent airspeed.
2—statute miles per hour.
3—knots.
4—percent of Mach.

8115. An aural landing gear warning device which operates in relation to flap position,

1—may have a manual shutoff located at the pilot or flight engineer station.
2—may be used instead of a throttle actuated warning device.
3—must have the flap position sensor located on the flap selector cable.
4—must sound continuously when the flaps are extended beyond the maximum approach climb configuration if the gear is not down and locked.

8116. The carriage of cargo aft of the rearmost seated passengers in the passenger compartment is

1—not permissible.
2—permissible only if the cargo is carried in an approved cargo bin.
3—permissible if carried either in an approved cargo bin or tied securely to the floor.
4—not permissible if the aircraft is used on a domestic or flag carrier route.

8117. Any piece of cargo or carry-on baggage in the passenger compartment ahead of the foremost seated passengers must be

1—packaged or covered in a manner to avoid possible injury to passengers.
2—secured with approved tiedown straps or net.
3—secured in a passenger seat with a seatbelt.
4—carried in a cargo bin.

8118. Which of the following rules apply when cargo is carried in the passenger compartment ahead of the foremost seated passengers?

1—The cargo must be secured to the floor with approved cargo tiedown straps.
2—The cargo must be carried forward of a bulkhead or divider.
3—The cargo must be in a passenger seat and secured by a seatbelt.
4—The cargo must be carried in approved cargo bins.

8119. Cargo in the passenger compartment may be carried in approved cargo bins if located

1—in an area above the passenger seats.
2—in a passenger seat.
3—forward of the foremost seated passengers.
4—anywhere in the passenger compartment.

8120. The pilot-in-command or second-in-command time used to satisfy the aeronautical experience requirements for the Flight Engineer Certificate must have been obtained on

1—a four-engine aircraft.
2—at least a three-engine transport, if turbojet-powered.
3—an airplane on which a flight engineer is required.
4—a transport category airplane or equivalent military airplane.

8121. Which minimum aeronautical experience qualifies an applicant to obtain a Flight Engineer Certificate with a class rating?

1—At least 24 months of practical experience in aircraft and engine repair.
2—200 hours of flight time as a pilot in command in a transport category airplane.
3—At least 50 hours as a flight engineer on the same class airplane for which the rating is sought.
4—Within 60 days prior to application, successful completion of an approved flight engineer ground school.

8122. A flight engineer who has completed all of the required written tests and completed the practical test in a Boeing 727 is entitled to which aircraft class rating?

1—Turbojet-powered.
2—Boeing 727.
3—Three-engine jet.
4—Turbojet, three or more engines.

8123. Which of the following is an aircraft class rating appropriate for a Flight Engineer Certificate?

1—Jet-powered.
2—Multiengine.
3—Turbopropeller-powered.
4—Transport.

8124. Which of the following is an aircraft class rating appropriate for a Flight Engineer Certificate?

1—Multiengine land.
2—Propeller-driven.
3—Turbojet-powered.
4—Three- or four-engine, fanjet.

8125. Which is an eligibility requirement for the issuance of a Flight Engineer Certificate by the FAA?

1—Hold a Second- or Third-Class Medical Certificate.
2—Be 21 years of age or older.
3—Be a citizen of the United States.
4—Have a fluent command of the English language.

8126. To be eligible for a Flight Engineer Certificate, with no limitations, a person must

1—hold a First-Class Medical Certificate issued no later than 6 months prior to the date of application.
2—pass a written test on airplane procedures and operations of reciprocating and jet aircraft engines.
3—hold either a pilot certificate or mechanic certificate.
4—be able to read, speak, and understand the English language.

8127. To be eligible for a Flight Engineer Certificate, a person must

1—pass a written test on airplane procedures and operations of reciprocating- and jet-powered engines.
2—hold a First- or Second-Class Medical Certificate issued within the 12 months before the date of application.
3—be able to read, speak, and write the English language.
4—be the holder of a pilot certificate or mechanic certificate.

8128. Which is grounds for revoking a flight engineer's certificate?

1—Flying 1,200 hours in 12 calendar months but logging only 1,000 hours.
2—Failure of a recurrent emergency procedures flight test.
3—Operating during a physical deficiency.
4—Alteration of the certificate.

8129. Which procedure applies for a flight engineer with an increase in physical deficiency beyond the limits of the standards of the medical certificate as outlined in FAR Part 67? The engineer

1—must have a recheck by an FAA medical examiner.
2—may not legally perform flight engineer duties.
3—may continue to perform as a flight engineer until the expiration date of the medical certificate.
4—must return (surrender) the medical certificate to an FAA inspector.

8130. An airman has lost a Flight Engineer Certificate document. The privileges of the certificate may be exercised when possessing a

1—confirming telegram from the FAA.
2—valid medical certificate but only for a period of 120 days.
3—copy of a passing written test grade report.
4—temporary certificate issued by a designated flight engineer examiner.

8131. Unless suspended or revoked, a Flight Engineer Certificate

1—expires at the end of the 24th month following the month of issuance or renewal.
2—expires the same date as the expiration of the required First-Class Medical Certificate.
3—expires 1 year after the month of issuance.
4—is issued without a specific expiration date.

8132. Which of the following is grounds for the revocation of a Flight Engineer Certificate by the FAA?

1—Transporation of depressant or stimulant drugs.
2—Failure to pass a first- or second-class medical examination every 12 months.
3—Conviction on any charge of misdemeanor.
4—Failure to reapply for Flight Engineer Certificate renewal before the 24-month expiration date.

8133. What restriction is placed upon a flight engineer during the period in which the Flight Engineer Certificate is suspended?

1—May not take a written test at an FAA office.
2—May not act as a pilot if a valid Commercial Pilot Certificate is possessed.
3—May not apply for a rating to be added to the Flight Engineer Certificate.
4—May not apply for a pilot, mechanic, or ground instructor certificate.

8134. During the period a Flight Engineer Certificate is suspended by the FAA, a certificated flight crewmember may not (without special FAA authorization)

1—take a written test at an FAA office.
2—exercise the privileges of a Commercial Pilot Certificate in passenger flight operation under FAR Part 121.
3—apply for any certificate issued by the FAA.
4—have a rating added to the certificate.

8135. Unless the order of revocation provides otherwise, a person whose Flight Engineer Certificate is revoked may not apply for the same kind of certificate for what period of time?

1—30 days after the date of revocation.
2—90 days after the date of revocation.
3—6 months after the date of revocation.
4—1 year after the date of revocation.

8136. Which current certificates must a flight crewmember possess to act as a flight engineer on a Boeing 747 aircraft in passenger service for a domestic U.S. air carrier?

1—Flight Engineer Certificate with appropriate rating or a Commercial Pilot Certificate with instrument rating and a Second–Class Medical Certificate.
2—Flight Engineer Certificate with appropriate rating or a foreign flight engineer license and a Second– or Third–Class Medical Certificate.
3—Flight Engineer Certificate with B–747 rating and a First– or Second–Class Medical Certificate.
4—Flight Engineer Certificate with turbojet rating and a Second–Class (or higher) Medical Certificate.

8137. The possession of which combination of certificates permits an airman to perform as a flight engineer?

1—A Commercial Pilot Certificate with instrument rating and a Second–Class Medical Certificate.
2—A special purpose Flight Engineer Certificate and Third–Class Medical Certificate.
3—A temporary medical certificate and a limited Flight Engineer Certificate.
4—A temporary Flight Engineer Certificate and a Second–Class Medical Certificate.

8138. Which current certificates must a flight crewmember possess to act as a flight engineer on a DC–8 aircraft in passenger service for a domestic U.S. air carrier?

1—Flight Engineer Certificate with appropriate rating, or a foreign flight engineer license and a Second– or Third–Class Medical Certificate.
2—Flight Engineer Certificate with appropriate rating, or a Commercial Pilot Certificate with instrument rating and a Second–Class Medical Certificate.
3—Flight Engineer Certificate with DC–8 rating, and a First– or Second–Class Medical Certificate.
4—Flight Engineer Certificate with turbojet rating, and a First– or Second–Class Medical Certificate.

8139. What is the last date an airman may have performed as a required flight engineer on a domestic air carrier if the engineer's second–class physical examination was conducted on March 15, 1986?

1—March 31, 1987.
2—March 15, 1987.
3—September 15, 1986.
4—March 31, 1988.

8140. Which speed symbol is correctly defined?

1—V_{MF} means maximum flap extended speed.
2—V_{LE} means maximum landing gear operating speed.
3—V_{SO} means minimum steady flight speed in landing configuration.
4—V_{MO} means minimum control speed with the critical engine inoperative.

8141. Which speed symbol is correctly defined?

1—V_{MC} means the minimum control speed with No. 1 engine inoperative.
2—V_{LO} means the maximum speed for operation with the landing gear extended.
3—V_F means the maximum speed with flaps in the extended position.
4—V_1 means takeoff decision speed.

8142. Which speed symbol is correctly defined?

1—V_{MF} means maximum flap extended speed.
2—V_{LE} means maximum landing gear operating speed.
3—V_{MO} means minimum control speed with the critical engine inoperative.
4—V_S means the stalling speed or the minimum steady flight speed at which the airplane is controllable.

8143. Which is a definition of V_2 speed?

1—Speed for the best rate of climb.
2—Takeoff decision speed.
3—Takeoff safety speed.
4—Minimum takeoff speed.

8144. Which altitude is the highest at which an engine can maintain a rated continuous manifold pressure at maximum continuous rotational speed?

1—Rated altitude.
2—Critical altitude.
3—Service ceiling.
4—Absolute ceiling.

8145. The term fireproof indicates that the material can withstand the heat of a fire at least as well as which other material?

1—Aluminum alloy.
2—Asbestos.
3—Steel.
4—Titanium.

8146. What is a definition of the term crewmember relative to provisions of the FAR's?

1—United States citizens assigned to duty on an air carrier engaged in international air commerce.
2—Only a pilot, flight engineer, or flight navigator assigned to duty in an aircraft during flight time.
3—A person assigned to perform duty in an aircraft during flight time.
4—Any person assigned to duty in an aircraft during flight except a pilot or flight engineer.

8147. According to the FAR's, which of the following defines flight crewmember?

1—Any person, including a stewardess, assigned to duty in an aircraft during flight time.
2—A certificated airman assigned to flight deck duty during flight time.
3—A pilot, flight engineer, or flight navigator assigned to duty in an aircraft during flight time.
4—A pilot or flight engineer assigned to flight deck duty but no other air carrier employees.

8148. What is the definition of the term critical engine?

1—The outboard engine on the right side.
2—The engine whose failure would most adversely affect airplane performance or handling qualities.
3—The engine which carries the greatest accessory load during takeoff.
4—Either outboard engine.

8149. Which class of material will not propagate a flame, beyond safe limits, after the ignition source is removed?

1—Flash resistant.
2—Fireproof.
3—Flammable.
4—Flame resistant.

8150. A material which is not susceptible to burning violently when ignited is defined as

1—flame resistant.
2—fireproof.
3—flash resistant.
4—nonflammable.

8151. Determine the takeoff speeds for these conditions. (See Figure 1.)

Gross weight.....175,000 lb.
Flaps.....5°
Airport PA/T.....5,100 ft./–5° C

1—V_1 and V_R, 152; V_2, 161.
2—V_1 and V_R, 149; V_2, 161.
3—V_1 and V_R, 137; V_2, 147.
4—V_1 and V_R, 147; V_2, 161.

8152. Determine the takeoff speeds for these conditions. (See Figure 1.)

Gross weight.....185,000 lb.
Flaps.....25°
Airport PA/T.....3,100 ft./15° C

1—V_1 and V_R, 145; V_2, 155.
2—V_1 and V_R, 151; V_2, 160.
3—V_1 and V_R, 134; V_2, 147.
4—V_1 and V_R, 136; V_2, 147.

8153. Determine the takeoff speeds for these conditions. (See Figure 1.)

Gross weight.....165,000 lb.
Flaps.....15°
Airport PA/T.....Sea level/15° C

1—V_1 and V_R, 134; V_2, 148.
2—V_1 and V_R, 140; V_2, 152.
3—V_1 and V_R, 137; V_2, 147.
4—V_1 and V_R, 142; V_2, 152.

TAKEOFF SPEEDS

PRESSURE ALT – 1000 FT		OAT							
9 TO 11	°F	(Above Certified Altitude)				–65 TO –54	25 TO –4	28 TO – 3	87 TO 31
	°C								
7 TO 9	°F			–65 TO –54	9 TO –13	10 TO –12	75 TO 24	76 TO 25	104 TO 40
	°C								
5 TO 7	°F	–65 TO –54	–10 TO –23	– 8 TO –22	42 TO 5	43 TO 6	97 TO 36	98 TO 37	111 TO 44
	°C								
3 TO 5	°F	–65 TO –54	32 TO 0	33 TO 1	90 TO 32	91 TO 33	113 TO 45	114 TO 46	120 TO 49
	°C								
1 TO 3	°F	–65 TO –54	83 TO 28	84 TO 29	108 TO 41	107 TO 42	120 TO 49		
	°C								
–1 TO 1	°F →	–65 →TO	99	100 TO 38	120 TO 49				
	°C	–54	37						
FLAPS	GROSS WEIGHT 1000 LB	$V_1 = V_R, V_2$		$V_1 = V_R, V_2$		$V_1 = V_R, V_2$		$V_1 = V_R, V_2$	
5	210	165	175	166	175				
	200	160	171	162	171				
	190	155	167	157	167	158	167		
	180	150	163	152	163	154	163		
	170	144	159	147	159	149	159	150	158
	160	140	154	141	153	143	153	145	153
	150	135	149	136	149	138	149	140	148
	140	129	145	130	145	132	144	134	144
	130	124	140	125	139	128	138	128	138
	120	119	135	120	134	120	134	121	133
15	210	150	160	157	160				
	200	151	162	153	162				
	190	146	158	148	158	149	158		
	180	141	154	143	154	145	154		
	170	136	150	138	150	140	150	141	149
	160	132	146	133	145	135	145	137	145
	150	127	141	128	141	130	141	132	140
	140	122	137	123	137	124	130	126	136
	130	117	133	118	132	118	131	120	131
	120	112	128	113	127	113	127	115	199
25	210	146	157	147	157				
	200	141	153	143	153				
	190	137	149	138	149	139	149		
	180	132	145	134	145	136	145		
	170	127	141	129	141	131	141	132	140
	160	123	137	124	137	126	157	128	136
	150	119	133	120	133	122	133	124	132
	140	114	129	115	129	116	128	118	128
	130	109	125	110	124	110	124	112	123
	120	105	120	106	120	106	119	108	118

Figure 1

8154. Determine the maximum takeoff power settings. (See Figures 2 and 3.)

Pressure altitude.....Sea Level
Ambient temp. (OAT).....15° C
A/C bleed.....1 OFF
2 and 3 ON
Eng. A/I.....OFF
No. 2 eng. EPR gauge.....Inoperative

1—Eng. 1, 2.12; Eng. 2, 98.2; Eng. 3, 2.10.
2—Eng. 1, 2.10; Eng. 2, 92.7; Eng. 3, 2.14.
3—Eng. 1, 2.14; Eng. 2, 96.9; Eng. 3, 2.10.
4—Eng. 1, 2.10; Eng. 2, 2.11; Eng. 3, 98.2.

8155. Determine the maximum takeoff power settings. (See Figures 2 and 3.)

Pressure altitude.....2,000 ft.
OAT.....+40° F
A/C bleed.....OFF
Eng. A/I.....ON
No. 3 eng. EPR gauge.....Inoperative

1—Eng. 1, 2.17; Eng. 2, 2.18; Eng. 3, 97.2.
2—Eng. 1, 2.03; Eng. 2, 1.97; Eng. 3, 97.9.
3—Eng. 1, 2.21; Eng. 2, 2.15; Eng. 3, 97.8.
4—Eng. 1, 2.22; Eng. 2, 2.15; Eng. 3, 97.2.

8156. Determine the maximum takeoff power settings. (See Figures 2 and 3.)

Pressure altitude.....-1,000 ft.
OAT.....+59° F
A/C bleed.....ON
Eng. A/I.....OFF
No. 3 eng. EPR gauge.....Inoperative

1—Eng. 1, 2.08; Eng. 2, 2.06; Eng. 3, 94.3.
2—Eng. 1, 2.08; Eng. 2, 2.03; Eng. 3, 96.4.
3—Eng. 1, 2.04; Eng. 2, 2.06; Eng. 3, 95.2.
4—Eng. 1, 2.12; Eng. 2, 2.13; Eng. 3, 97.4.

8157. Which of these factors has the effect of reducing critical engine failure speed?

1—Slush on runway and inoperative antiskid.
2—Dry runway with no slope.
3—Dry runway with uphill slope.
4—High gross weight.

MAX TAKEOFF EPR

0 – 60 KNOTS — ENG 1 & 3 AIRBLEED ON, ENG 2 NO AIRBLEED

PRESS ALT FT		OAT °F / °C	-67 TO -9 / -55 TO -23	-4 / -20	5 / -15	14 / -10	23 / -5	32 / 0	41 / 5	50 / 10	59 / 15	68 / 20	77 / 25	86 / 30	95 / 35	104 / 40	113 / 45	120 / 49
-1000	ENG	1 & 3	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.03	1.99	1.94	1.91
		2	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.05	2.00	1.96	1.92
S.L.		1 & 3	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.08	2.03	1.99	1.94	1.91	
		2	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.10	2.05	2.00	1.96	1.92	
1000		1 & 3	2.15	2.15	2.15	2.15	2.15	2.15	2.13	2.12	2.12	2.11	2.08	2.03	1.99	1.94	1.91	
		2	2.16	2.16	2.16	2.16	2.16	2.16	2.15	2.13	2.13	2.12	2.10	2.05	2.00	1.96	1.92	
2000		1 & 3	2.21	2.21	2.21	2.21	2.20	2.17	2.14	2.14	2.14	2.11	2.08	2.03	1.99	1.94	1.91	
		2	2.22	2.22	2.22	2.22	2.21	2.18	2.16	2.16	2.15	2.12	2.10	2.05	2.00	1.96	1.92	
3000		1 & 3	2.26	2.26	2.25	2.23	2.20	2.17	2.14	2.14	2.14	2.11	2.08	2.03	1.99	1.94	1.91	
		2	2.28	2.28	2.27	2.24	2.21	2.18	2.16	2.16	2.15	2.12	2.10	2.05	2.00	1.96	1.92	
3856 & ABOVE		1 & 3	2.31	2.29	2.27	2.25	2.23	2.20	2.17	2.14	2.14	2.14	2.11	2.08	2.03	1.99	1.94	1.91
		2	2.32	2.31	2.29	2.27	2.24	2.21	2.18	2.16	2.16	2.15	2.12	2.10	2.05	2.00	1.96	1.92

EPR BLEED CORRECTIONS	ENG 1 & 3	ENG 2
AIR CONDITIONING	OFF + .04	–
ENGINE ANTI-ICE ON	–	-.03

Figure 2

MAX TAKEOFF N_1

PRESS ALT FT	OAT °F / °C	-65 / -54	-49 / -45	-40 / -40	-31 / -35	-22 / -30	-13 / -25	-4 / -20	5 / -15	14 / -10	23 / -5	32 / 0	41 / 5	50 / 10	59 / 15	68 / 20	77 / 25	86 / 30	95 / 35	104 / 40	113 / 45	120 / 49
-1000		83.2	84.8	85.7	86.5	87.4	88.3	89.2	90.1	91.0	91.9	92.7	93.5	94.3	95.2	95.9	96.7	97.5	98.1	97.2	96.3	95.6
S.L.		84.7	86.3	87.2	88.1	89.1	90.0	90.9	91.8	92.7	93.6	94.4	95.3	96.1	96.9	97.8	98.5	99.0	98.1	97.2	96.3	95.6
1000		86.4	88.0	88.9	89.9	90.8	91.7	92.7	93.6	94.5	95.4	96.3	97.1	97.4	97.8	98.6	99.2	99.0	98.1	97.2	96.3	95.6
2000		88.1	89.8	90.8	91.7	92.7	93.6	94.6	95.5	96.4	97.3	97.9	97.8	97.7	98.5	99.2	99.2	99.0	98.1	97.2	96.3	95.6
3000		89.8	91.6	92.6	93.5	94.5	95.5	96.5	97.4	98.0	98.0	97.9	97.8	97.7	98.5	99.2	99.2	99.0	98.1	97.2	96.3	95.6
3856 & ABOVE		91.2	93.1	94.1	95.1	96.1	97.1	97.7	97.8	98.0	98.0	97.9	97.8	97.7	98.5	99.2	99.2	99.0	98.1	97.2	96.3	95.6

N_1 BLEED CORRECTIONS	ALL ENGINES
	OFF + 1.3

Figure 3

8158. How many minutes of dump time would be required to reach maximum landing weight at the touchdown under the following conditions?

Cruise weight.....171,000 lb.
Max. landing weight.....142,500 lb.
Average fuel flow during dumping and descent to touchdown.....3,170 lb./hr./eng.
Time from start dump to landing.....19 min.
Fuel dump rate.....2,300 lb./min.

1—9.5 minutes.
2—10.1 minutes.
3—11.1 minutes.
4—12.4 minutes.

8159. How many minutes of dump time would be required to reach maximum landing weight at the touchdown under the following conditions?

Cruise weight.....169,225 lb.
Max. landing weight.....142,500 lb.
Average fuel flow during dumping and descent to touchdown.....2,970 lb./hr./eng.
Time from start dump to landing.....24 min.
Fuel dump rate.....2,300 lb./min.

1—9.6 minutes.
2—10.1 minutes.
3—10.9 minutes.
4—11.6 minutes.

8160. Which action is appropriate for an overheat or fire indication in the main wheel well?

1—Shut off hydraulic pumps and air conditioning.
2—Close both wing anti-ice valves.
3—Depressurize and use CO_2 hand extinguishers.
4—Lower the gear to cool the area.

8161. How should the landing gear be extended and the doors opened during the wheel well fire procedure?

1—Landing gear lever down, pull the landing gear control circuit breaker, then landing gear lever up.
2—Lower the main gear only by manual system.
3—Wheel well doors opened manually, discharge extinguisher, then wheel well doors closed manually.
4—Landing gear lever down, then momentarily up, then off.

8162. What condition is necessary for arming an engine fire extinguisher?

1—The fire switch must be pulled out.
2—A fire signal must be present.
3—The battery switch must be on.
4—The bottle discharge button must be depressed.

8163. What action can be taken if the fire bell rings but no warning light illuminates?

1—Silence the bell and pull all detector CB's; reinstate CB's one at a time; the bell will ring when the CB for the area with the fire is reset.
2—Check the engine gauges for an abnormally high oil temperature.
3—Pull the detector CB's one at a time; the bell will be silenced when the CB for the area with the fire is pulled.
4—Pull the fire switches one at a time; when the bell is silenced, the fire has been located.

8164. An airplane has been cruising for 2 hours 15 minutes at a speed of Mach .82. Total fuel consumed during this period has been 27,250 lb. If Mach 1.0 is 595 knots, what has been the nautical air miles/1,000 lb. of fuel?

1—40.3 NAM/1,000 lb.
2—43.7 NAM/1,000 lb.
3—46.4 NAM/1,000 lb.
4—53.3 NAM/1,000 lb.

8165. An airplane has been cruising for 2 hours 45 minutes at a speed of Mach .80. Total fuel consumed during this period has been 34,000 lb. If Mach 1.0 is 589 knots, what has been the nautical air miles/1,000 lb. of fuel?

1—38.1 NAM/1,000 lb.
2—40.0 NAM/1,000 lb.
3—43.7 NAM/1,000 lb.
4—46.4 NAM/1,000 lb.

8166. An airplane has been cruising for 2 hours 40 minutes at a speed of Mach .84. Total fuel consumed during this period has been 34,000 lb. If Mach 1.0 is 590 knots, what has been the nautical air miles/1,000 lb. of fuel?

1—38.1 NAM/1,000 lb.
2—38.9 NAM/1,000 lb.
3—40.0 NAM/1,000 lb.
4—42.5 NAM/1,000 lb.

8167. How many minutes of dump time would be required to reach maximum landing weight at the touchdown under the following conditions?

Cruise weight.....175,500 lb.
Max. landing weight.....154,500 lb.
Average fuel flow during dumping and descent to touchdown.....3,010 lb./hr./eng.
Time from start dump to landing.....22 min.
Fuel dump rate.....2,300 lb./min.

1—6.8 minutes.
2—7.7 minutes.
3—8.5 minutes.
4—9.1 minutes.

8168. Determine the go–around EPR's for these conditions. (See Figure 4.)

Pressure altitude.....1,000 ft.
TAT.....0° C
A/C bleeds.....Nos. 2 and 3 ON
No. 1 OFF
Anti–ice.....Eng. ON

1—Eng. 1, 2.12; Eng. 2, 2.15; Eng. 3, 2.12.
2—Eng. 1, 2.16; Eng. 2, 2.11; Eng. 3, 2.16.
3—Eng. 1, 2.16; Eng. 2, 2.08; Eng. 3, 2.12.
4—Eng. 1, 2.12; Eng. 2, 2.11; Eng. 3, 2.08.

8169. Determine the go–around EPR's for these conditions. (See Figure 4.)

Pressure altitude.....4,000 ft.
OAT.....–5° C
A/C bleeds.....Normal
Anti–ice.....Eng. and Wing ON;
2 bleeds

1—Engs. 1 and 3, 2.11; Eng. 2, 2.11.
2—Engs. 1 and 3, 2.12; Eng. 2, 2.20.
3—Engs. 1 and 3, 2.21; Eng. 2, 2.23.
4—Engs. 1 and 3, 2.14; Eng. 2, 2.22.

8170. Determine the go–around EPR's for these conditions. (See Figure 4.)

Pressure altitude.....3,000 ft.
TAT.....0° C
A/C bleeds.....Normal
Anti–ice.....Eng. and Wing ON;
2 bleeds

1—Engs. 1 and 3, 2.20; Eng. 2, 2.22.
2—Engs. 1 and 3, 2.11; Eng. 2, 2.19.
3—Engs. 1 and 3, 2.10; Eng. 2, 2.19.
4—Engs. 1 and 3, 2.24; Eng. 2, 2.18.

8171. Determine the go–around EPR's for these conditions. (See Figure 4.)

Pressure altitude.....Sea level
TAT.....–10° C
A/C bleeds.....Normal
Anti–ice.....Eng. and Wing ON;
2 bleeds

1—Engs. 1 and 3, 1.98; Eng. 2, 2.06.
2—Engs. 1 and 3, 2.06; Eng. 2, 2.07.
3—Engs. 1 and 3, 2.07; Eng. 2, 2.09.
4—Engs. 1 and 3, 1.97; Eng. 2, 2.09.

8172. Determine the go–around EPR's for these conditions. (See Figure 4.)

Pressure altitude.....2,000 ft.
TAT.....10° C
A/C bleeds.....Normal
Anti–ice.....Eng. ON
Wing OFF

1—Engs. 1 and 3, 2.13; Eng. 2, 2.13.
2—Engs. 1 and 3, 2.13; En.w. 2, 2.16.
3—Engs. 1 and 3, 2.17; Eng. 2, 2.16.
4—Engs. 1 and 3, 2.04; Eng. 2, 2.11.

8173. Determine the go–around EPR's for these conditions. (See Figure 4.)

Pressure altitude.....2,000 ft.
OAT.....18° C
A/C bleeds.....Nos. 1 and 2 ON
No. 3 OFF
Anti–ice.....OFF

1—Eng. 1, 2.16; Eng. 2, 2.12; Eng. 3, 2.16.
2—Eng. 1, 2.12; Eng. 2, 2.11; Eng. 3, 2.16.
3—Eng. 1, 2.08; Eng. 2, 2.15; Eng. 3, 2.12.
4—Eng. 1, 2.11; Eng. 2, 2.08; Eng. 3, 2.07.

8174. What indication can the flightcrew observe to assure that fire–extinguishing agent has discharged to the engine?

1—Engine fire switch light illuminated.
2—Bottle discharge light illuminated.
3—Yellow indicator disc missing.
4—Engine temperature gauges suddenly decrease.

8175. Which is an indication that the engine fuel shutoff valve has closed during the engine fire procedure?

1—EGT reduces and pump lights illuminate.
2—Valve light comes on momentarily, then goes off.
3—Fuel flow reduces to zero and engine shuts down.
4—Valve light comes on and goes off only when switch is placed off.

8176. When should the second freon agent bottle be discharged to combat an engine fire if the fire warning light remains on?

1—Immediately following the first one.
2—15 seconds after the first one.
3—30 seconds after the first one.
4—1 minute after the first one.

8177. How is the engine fuel shutoff valve closed during the engine fire procedure?

1—When the throttle is closed.
2—When the start lever is moved to cutoff.
3—When the extinguisher discharge switch is pressed.
4—When the fire switch is pulled.

O AROUND EPR

ENG 1 & 3 A/C ON
ENG 2 NO BLEED

PRESSURE ALTITUDE–FT		OAT °F	–82	–10	0	10	18	27	38	47	55	69	73	83	91	100	110	119
		°C	–63	–23	–18	–13	–8	–3	3	8	13	18	23	28	33	38	43	48
		TAT °C	–60	–20	–15	–10	–5	0	5	10	15	20	25	30	35	40	45	50
–1000	ENGINE 1 & 3		2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	1.99	1.94	1.89
	2		2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.01	1.97	1.91
SEA LEVEL	1 & 3		2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.04	1.99	1.94	1.89
	2		2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.06	2.01	1.97	1.91
1000	1 & 3		2.12	2.12	2.12	2.12	2.12	2.12	2.12	2.12	2.09	2.09	2.09	2.08	2.04	1.99	1.94	1.89
	2		2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.12	2.12	2.12	2.10	2.06	2.01	1.97	1.91
2000	1 & 3		2.18	2.18	2.18	2.18	2.18	2.18	2.17	2.13	2.12	2.12	2.10	2.08	2.04	1.99	1.94	1.89
	2		2.20	2.20	2.20	2.20	2.20	2.20	2.19	2.16	2.15	2.15	2.13	2.10	2.06	2.01	1.97	1.91
3000	1 & 3		2.24	2.24	2.24	2.24	2.23	2.20	2.17	2.13	2.12	2.12	2.10	2.08	2.04	1.99	1.94	1.89
	2		2.27	2.27	2.27	2.27	2.25	2.22	2.19	2.16	2.15	2.15	2.13	2.10	2.06	2.01	1.97	1.91
3900 AND ABOVE	1 & 3		2.30	2.30	2.28	2.26	2.23	2.20	2.17	2.13	2.12	2.12	2.10	2.08	2.04	1.99	1.94	1.89
	2		2.32	2.32	2.30	2.28	2.25	2.22	2.19	2.16	2.15	2.15	2.13	2.10	2.06	2.01	1.97	1.91

EPR BLEED CORRECTIONS		ENG 1&3	ENG 2
A/C BLEEDS		OFF +.04	ON –.04
ENGINE ANTI-ICE ON		– –	–.03
ENGINE AND WING ANTI-ICE ON	TWO ENGINE BLEEDS	–.09	–.03
	ONE ENGINE BLEED	–.10	–.03

Figure 4

8178. What is the proper sequence for discharging the fire-extinguishing agent?

1—Switch bottle transfer; pull fire switch; pull discharge switch.
2—Press discharge switch; pull fire switch and hold 30 seconds.
3—Pull fire switch and hold out; press discharge switch; switch bottle transfer immediately.
4—Pull fire switch; press discharge switch and hold 1 second.

8179. If an engine fire occurs in flight, what should be the first flight engineer action?

1—Fire switch – pull.
2—Essential power – check.
3—Start lever – cutoff.
4—Oxygen panel – emergency.

8180. With an in-flight engine fire, when should the second fire-extinguisher bottle be discharged?

1—30 seconds after the first one, if the fire warning light is still on.
2—15 seconds after the first one, if the fire warning bell rings again.
3—Immediately following the first one to ensure complete smother and cooling.
4—At least 1 minute after the first one, if the fire warning light is still on.

8181. What is accomplished by actuation of the fire-extinguisher system transfer switch?

1—Extinguisher agent discharge is stopped by the closing of the bottle valve.
2—The engine fuel shutoff valve is closed.
3—An alternate freon bottle electrical circuit is armed.
4—The second engine fire-extinguisher selector valve is opened.

8182. What is the function of the bottle transfer switch?

1—Selects freon bottle to be discharged.
2—Opens the engine selector control valves.
3—Arms the freon bottle for its second shot.
4—Selects the engine to which the freon is discharged.

8183. What is the indication of a thermally discharged extinguisher bottle with electrical power on?

1—Only the red disc is blown out.
2—The yellow disc is blown out and the bottle discharge light is on.
3—The red disc is blown out and the bottle discharge light is on.
4—Only the yellow disc is blown out.

8184. If a fire-extinguisher bottle thermally discharges in flight, how can it be detected from the cockpit?

1—The bottle discharge light will illuminate.
2—The red seal will be ruptured.
3—The fire warning bell will ring.
4—The manifold pressurized light will illuminate.

8185. Which aircraft areas are protected by a fixed fire-extinguisher system?

1—Engine strut, engine cowling, and APU area.
2—Engine nacelles, APU compartment, and wheel wells.
3—Engine hot section, engine accessory section, wheel wells, and ground power unit compartment.
4—Engine nacelles, main gear area, and lower cargo compartments.

8186. What causes the bottle discharge light to illuminate?

1—Pressing the discharge switch.
2—Complete depletion of the CO_2 charge.
3—Low pressure in the bottle.
4—Extinguishing of the engine fire.

8187. In the fire-extinguishing system, a blown red indicator disc reveals that the

1—manifold to the engine has been pressurized.
2—maximum temperature at the bottle has been exceeded.
3—nitrogen precharge is low.
4—contents of all bottles have been discharged.

8188. What would be the external indication if two engine fire-extinguisher bottles had been discharged from the flight deck?

1—Two yellow discs missing.
2—One gray disc mising.
3—One yellow disc missing.
4—Two red discs missing.

8189. During the preflight inspection, the engine fire-extinguisher system should be checked for

1—volume of carbon dioxide in the container.
2—air preload pressure.
3—bottle pressure limits at ambient temperature.
4—flood control valve freedom of operation.

8190. How many fixed fire-extinguisher bottles are located on the aircraft?

1—Two.
2—Three.
3—Four.
4—Six.

8191. What is the indication of an electrically discharged extinguisher bottle?

1—Only the red disc is blown out.
2—The red disc is blown out and the bottle discharge light is on.
3—Only the yellow disc is blown out.
4—The yellow disc is blown out and the bottle discharge light is on.

8192. What would the absence of one red fire-extinguisher indicator disc indicate?

1—Discharge of one freon bottle by actuation of the discharge switch.
2—Thermal discharge of two freon bottles due to high temperature.
3—The extinguishing system has been actuated and one or both bottle(s) is (are) empty.
4—Thermal discharge of one freon bottle due to high temperature.

8193. What fire detection means, if any, is provided for the lower cargo compartment?

1—No equipment is installed to detect a Class D compartment fire.
2—The fire bell rings, but no warning light illuminates.
3—Flames can be observed through the viewing ports in the cabin floor.
4—Smoke detector tubes on the flight engineer's panel.

8194. What happens when the fire bell cutout switch is pressed?

1—The bell is silenced but rings again if a fire is still present.
2—The bell is silenced and the fire warning light is extinguished.
3—The bell is cut out of the fire-detection system.
4—The bell is silenced and the bell circuit is rearmed for a second fire.

8195. What actions occur when No. 1 engine fire switch is pulled? (See Figure 5.)

1—Generator field relay tripped, engine bleed air closed, engine cowl TAI shutoff closed, and hydraulic fluid shutoff closed.
2—Generator field relay tripped, hydraulic fluid shutoff closed, engine bleed air closed, and wing shutoff closed.
3—Generator breaker tripped, wing shutoff closed, and hydraulic fluid shutoff closed.
4—Generator field and bus tie tripped, engine bleed air closed, and wing shutoff closed.

8196. What occurs when the fire test switch is released? (See Figure 5.)

1—The wheel well light goes out immediately.
2—The fire bell is silenced.
3—All warning lights stay on until the heaters cool down.
4—All warning lights go out after a 10-second delay.

8197. What action should be taken while holding the fire warning test switch? (See Figure 5.)

1—Press the master warning light cover after all engine warning lights come on.
2—Press the bell cutout after the warning lights come on.
3—Turn off essential a.c. to assure that fire warnings operate on battery power.
4—Pull the bell circuit breaker after the bell rings the first time.

8198. Which fire warning can be cut out by pressing the cutout switch? (See Figure 5.)

1—Engine fire warning light.
2—Wheel well fire warning light.
3—APU fire warning light.
4—APU fire warning horn.

8199. When an engine fire warning occurs in flight, actuation of the cutout switch will

1—silence the bell and put the light out.
2—silence the bell but the light will remain on.
3—put the light out but the bell will continue to ring if the fire is still present.
4—reset the light and the bell circuits in preparation for a second fire.

8200. What is indicated when a fire-detector inoperative light is on?

1—Completely inoperative fire-detection system.
2—Short in one loop of the fire-detection system.
3—Fire-detection system is properly armed.
4—Fire-extinguishing system for one engine is inoperative.

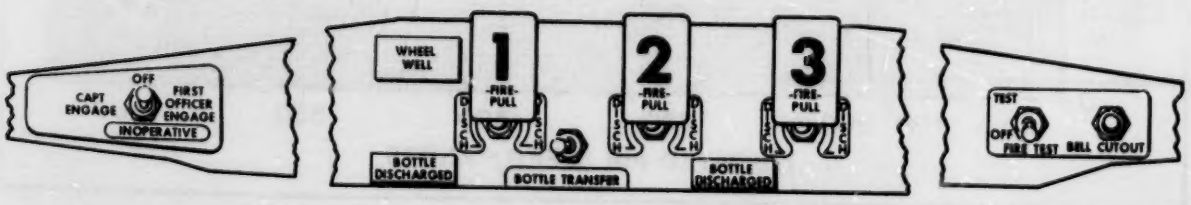

Figure 5

8201. Which actions should be taken to increase the buoyancy (watertight integrity) of the aircraft for ditching?

1—Pressurize fuselage, lower flaps, and leave gear up.
2—Dump fuel, close outflow valve and cargo heat valve.
3—Close all fuel valves, depressurize fuselage, and lower flaps.
4—Dump fuel, open cargo heat valve, and leave flaps up.

8202. How should the flight controls be positioned to facilitate passenger evacuation through the overwing exits?

1—Speed brake lever up.
2—Flaps full down.
3—Flaps halfway down (24°).
4—Speed brake lever halfway up (20°).

8203. Which action should be taken during the passenger evacuation procedure to facilitate opening of the escape hatches or doors?

1—Cabin altitude selector, field elevation plus 1,000 ft.
2—Outflow valve control switch, open.
3—Cabin altitude selector, field elevation less 200 ft.
4—Outflow valve control switch, close.

8204. What action should be taken if an engine is windmilling at 21 percent N_1 and 28 percent N_2 when operating at FL270 and 280 knots? (See Figure 6.)

1—The engine should not be started at any airspeed or altitude.
2—The engine may be started only after decreasing altitude.
3—The engine should not be started.
4—The engine may be started at the existing airspeed.

8205. What action should be taken if an engine is windmilling at 21 percent N_1 and 25 percent N_2 when operating at FL280 and 270 knots? (See Figure 6.)

1—The engine may be started only after decreasing airspeed.
2—The engine may be started only after decreasing altitude.
3—The engine should not be started.
4—The engine may be started at the existing airspeed.

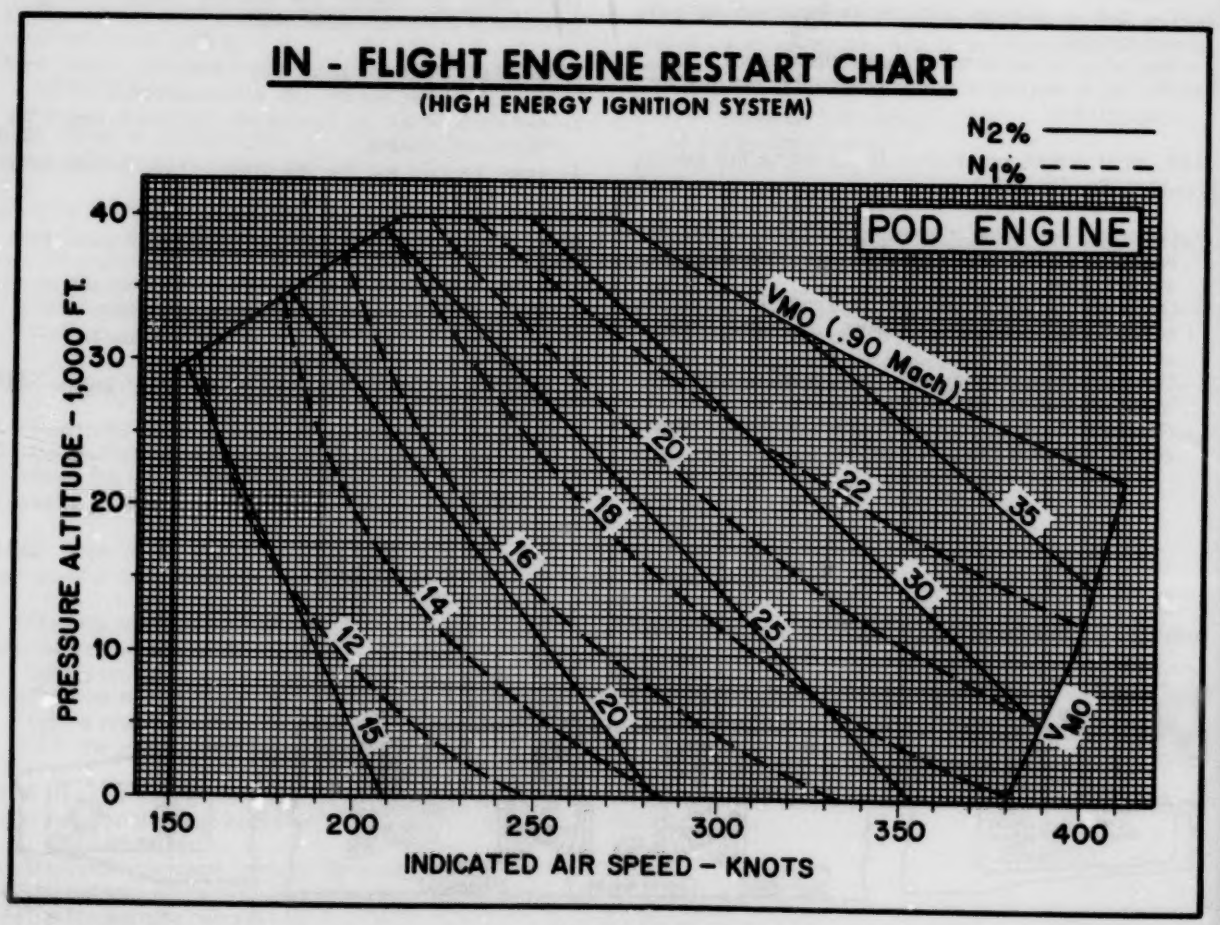

Figure 6

8206. Which type portable fire extinguisher is most desirable for use on galley fires?

1—Carbon dioxide.
2—Water with antifreeze agent.
3—Dry chemical.
4—Freon.

8207. Which precaution is advisable when using a portable CO_2 fire extinguisher?

1—Do not use on fires where flammable fluids or magnesium are burning.
2—Protect against inhaling CO_2 by using 100 percent oxygen.
3—Beware of shock when using for an electrical fire because CO_2 is conductive.
4—Spray extinguishant at the top of the fire to prevent spreading.

8208. What is indicated when the emergency exit lights unarmed light on the overhead panel is illuminated?

1—The emergency exit light switch is not on.
2—The emergency exit light switch is off.
3—An emergency exit light is removed from its receptacle.
4—The cabin attendant's emergency exit light switch is on.

8209. What will cause the emergency exit lights to come on with the switch in the ARMED position?

1—Use of APU or ground power unit current to supply the sync bus.
2—Turning on the no smoking sign switch.
3—Loss of essential a.c. and essential d.c.
4—Loss of essential a.c.

8210. What source provides power to operate the emergency exit lights?

1—The aircraft battery.
2—The essential a.c. bus.
3—Batteries contained in each light.
4—Dry-cell battery packs located in each raft.

8211. What use is made of the air-start envelope?

1—Determine if N_1 and N_2 RPM's are within limits for the indicated airspeed and pressure altitude.
2—Determine the RPM to which the starter must accelerate the engine prior to moving the start lever out of cutoff.
3—Determine the desired idle RPM for an indication of the correct time to activate in-flight ignition.
4—Determine if sufficient air is available in the air-start bottle for the altitude and airspeed.

8212. What action should be taken if an engine is windmilling at 24 percent N_1 and 32 percent N_2 when operating at FL320 and 260 knots? (See Figure 7.)

1—The engine may be started after increasing N_2 RPM with the starter.
2—The engine may be started after increasing N_1 RPM with the starter.
3—The engine should not be started.
4—The engine may be started under the existing conditions.

8213. What action should be taken if an engine is windmilling at 20 percent N_1 and 26 percent N_2 when operating at FL350 and 240 knots? (See Figure 7.)

1—The engine should not be started because the N_1 and N_2 RPM's are out of tolerance.
2—The engine should not be started because the N_2 RPM is out of tolerance.
3—The engine may be started under the existing conditions.
4—The engine may be started if the airspeed is reduced.

INFLIGHT ENGINE START ENVELOPE

IAS KNOTS		PRESSURE ALTITUDE 1000 FT								
		0	5	10	15	20	25	30	35	40
V_{MO}/M_{MO}	N_1%	18	20	22	23	25	26	26	26	27
	N_2%	27	29	32	34	37	37	35	34	33
400					23	25				
					34	36				
380		18	19	21	22	24	26			
		27	28	30	32	34	37			
360		17	18	20	21	23	25			
		25	27	28	30	32	34			
340		16	17	19	20	21	24	26		
		24	25	27	28	30	33	35		
320		15	16	18	19	20	22	25		
		22	23	25	27	28	31	33		
300		14	16	17	18	19	21	23	26	
		21	22	23	25	27	29	31	33	
280		13	15	16	17	18	20	22	24	
		19	20	22	23	25	27	29	31	
260		13	14	15	16	17	18	20	22	26
		18	19	20	21	23	25	26	29	31
240		12	13	14	15	16	17	18	20	23
		17	17	18	19	21	23	24	26	29
220		11	12	13	14	15	16	17	18	20
		15	16	17	18	19	21	22	24	26

NOMINAL WINDMILLING RPM

Figure 7

8214. In the event of an emergency evacuation requirement, you should be aware that the

1—overwing escape hatches move inward and can be released from either inside or outside.
2—emergency exit doors and hatches cannot be opened unless the aircraft is on the ground.
3—overwing escape hatches can only be released from the inside and have escape ropes available.
4—forward cabin entry door and the aft airstairs have escape slides and the galley doors have escape ropes.

8215. Which is an indication that the main entry escape slide is armed for automatic deployment and inflation?

1—The escape slide bottle pressure is 2,700 – 3,000 PSI.
2—The retainer bar is properly attached to the floor bracket.
3—The green airstair light is illuminated on the flight engineer's lower panel.
4—The inflation handle is visible at the doorsill.

8216. An engine has been shut down and later, a requirement arises for the use of that engine's power. Which of the following is correct concerning the decision of whether or not to restart that engine?

1—Do not restart if the EGT has dropped to ambient.
2—Do not restart an engine that has been shut down due to fire or fire warning.
3—The engine may not be restarted if it is windmilling within the air–start range.
4—The engine may be restarted but is limited to 5 minutes operation.

8217. An engine thrust reverser operating light illuminates in flight and the forward thrust lever is in IDLE position. Which procedure should be followed?

1—Shut down the engine, then place the reverse lever in REVERSE IDLE position.
2—Place the reverse lever in REVERSE IDLE position and close all engine airbleeds.
3—Operate the aircraft at high forward speed to help close the clamshell doors.
4—If the forward thrust lever cannot be advanced, shut down the engine.

8218. If, during cruise flight, a precautionary shutdown is required for reasons other than fire, which procedure should be followed?

1—Place the hydraulic pump switch off and the start lever to cutoff.
2—Allow the engine to stabilize at idle speed prior to shutdown.
3—Switch essential power to an operating generator and pull the engine fire switch.
4—Place the bleed air switch to close and the start lever to cutoff.

8219. During an emergency engine shutdown in flight, the throttle is closed; at idle RPM, the start lever is placed in cutoff and the fuel shutoff valve is closed. Which is an indication of a clean shutdown?

1—Fuel pump warning light on.
2—N_2 RPM less than 30 percent.
3—EGT decrease.
4—Oil pressure light on.

8220. Which action is required if No. 3 engine must be shut down while the flaps are down?

1—Flap lever – immediately to 2° position.
2—Essential power – standby.
3—Right pack switch – off.
4—Cargo heat outflow switch – open.

8221. Which action is required for the in–flight shutdown of No. 2 engine during the engine failure procedure (no fire)?

1—Hydraulic pump switch – close.
2—Engine fuel shutoff – close.
3—Essential power – select No. 1.
4—Fire switch – pull.

8222. What is the first event which occurs in the electrical generating system when the engine fire switch is pulled?

1—The generator is disconnected from the CSD.
2—The generator breaker is tripped.
3—The bus tie breaker is tripped.
4—The generator field relay is opened.

8223. If a precautionary engine shutdown is made while in cruise flight, what action should be taken to prevent damage to the windmilling engine and components?

1—Open the hydraulic supply valve to prevent overheating of the engine–driven hydraulic pump.
2—Restore fuel flow to the engine a minimum of 3 minutes each 30 minutes. to prevent the fuel control from overheating.
3—Open the pneumatic relief valve to bleed internal engine pressures.
4—Restore the engine oil supply to prevent bearing overheat and possible seizure.

8224. The yellow arc marking on the engine oil pressure gauge indicates a precautionary range for operating

1—at reduced thrust.
2—when the low oil pressure light is on.
3—during descent only.
4—on the ground.

8225. What action is required by the crew if the low oil pressure light comes on in flight with normal indicated oil pressure?

1—Retard the throttle; if the light goes out, shut down the engine.
2—Shut down the engine.
3—Continue to operate the engine until the oil pressure drops.
4—Retard the throttle; if the light does not go out, shut down the engine.

8226. What indication warns the crew that the main oil filter is clogged?

1—A gradual increase in oil temperature with normal oil pressure.
2—A gradual decrease in oil pressure.
3—The low oil pressure or filter bypass light on with low oil pressure.
4—The low oil pressure or filter bypass warning light on with normal oil pressure.

8227. Which action should be taken if, during a start, the fuel flow exceeds the starting limit (e.g., 1,100 lb./hr.) prior to starter cutout?

1—Decrease fuel flow by momentarily placing the start lever in cutoff, then back to start as necessary.
2—Place the start lever in cutoff and continue to motor the engine until fuel flow and EGT decrease.
3—If EGT is within limits, continue the start regardless of other indications.
4—Place the start lever in cutoff and release the engine start switch.

8228. Which action should be taken if a start is aborted because of excessive EGT?

1—Move the start lever to cutoff and leave the continuous ignition on.
2—Move the start lever to cutoff and hold the start switch in ground.
3—Move the start lever to idle and hold the start switch in ground for 20 seconds, then change both to off.
4—Place the start switch off, then move the start lever to cutoff after 20 seconds.

8229. What are indications of an impending hot start?

1—Turbine temperature above limits and high fuel flow.
2—EGT rising rapidly; low fuel flow; slow acceleration.
3—EGT rising slowly; low fuel flow; rapid acceleration.
4—EGT rising rapidly; high fuel flow; slow acceleration.

8230. What action should be taken if the start valve remains open after engine start?

1—Recycle the engine start switch on, then off.
2—Recycle the bleed valve for the affected engine on, then off.
3—Request manual closing of the valve by ground personnel.
4—Close the bleed valve for the affected engine and shut down the engine.

8231. If an engine start valve fails to open during start, when the OAT is below freezing, what action should be taken to free the valve?

1—Have ground personnel direct warm external air into the engine inlet.
2—Hold the start switch in ground so that hot air may melt the ice in the valve.
3—Open and close the throttle several times to crack the ice, then attempt another start.
4—Increase the manifold pressure to help overpower the valve.

8232. Which precaution is necessary if the engine access door amber light is on before starting the engines?

1—Do not start the APU.
2—Do not start No. 2 engine.
3—Assure that cowling doors are closed on the pod engines.
4—Close the aft stair door before taxiing.

8233. Climb power is normally maintained until

1—within approximately 500 ft. of cruise altitude.
2—exceeding cruise Mach by at least .05.
3—reaching cruise Mach or slightly higher.
4—reaching cruise altitude, then power is immediately set to cruise EPR.

8234. In addition to valve intransit light operation, what is an indication that the fuel heat valve has opened?

1—Engine oil temperature increase.
2—Engine EPR increase.
3—Engine EGT increase.
4—Engine fuel temperature increase.

8235. If the fuel tank temperature is 0° C or below, which action should be taken?

1—Turn fuel heat on for 1 minute prior to takeoff.
2—Turn fuel heat on and leave on until fuel temperature reaches +5° C.
3—Turn fuel tank heaters on for takeoff and climb.
4—Turn fuel tank heaters on to maintain fuel temperature above 0° C.

8236. What action should be taken if one fuel icing light comes on in flight?

1—Turn on all fuel heaters until the icing light goes out.
2—Turn on only the affected engine fuel heater and leave on.
3—Turn on all fuel heaters for 1 minute and repeat after 30 minutes if the light does not go out.
4—Turn on only the affected engine fuel heater for 1 minute and repeat after 1 minute if the light does not go out.

8237. During takeoff and final approach, which system should not be used?

1—Engine anti-ice.
2—Fuel heater.
3—Rain repellent.
4—Continuous ignition.

8238. Which step activates ignition during a normal start procedure on the ground?

1—Moving the start lever out of cutoff position.
2—Closing the starter switch.
3—N_2 RPM reaching 10 percent.
4—Placing the ignition switch in the GROUND position.

8239. What is an indication of engine light-off during an engine start?

1—Rise of fuel pressure.
2—Rise of RPM.
3—Rise of EGT.
4—Rise of oil pressure.

8240. At sea level, what is the minimum duct pressure for engine start?

1—22 PSI.
2—30 PSI.
3—45 PSI.
4—60 PSI.

8241. During a normal engine start, what is a visual indication of starter cutout?

1—Fluctuation of starter control system amperage.
2—Reduction of starter speed.
3—Increase of duct pressure.
4—Oil pressure light going out.

8242. What is the indication of the start valve closing after engine start?

1—An increase of duct pressure.
2—Start valve open light going out, with a decrease of duct pressure.
3—N_1 at 40 percent and an increase of bleed air pressure.
4—An increase of APU EGT indication.

8243. Which action should the flight engineer take immediately before the engines are started?

1—All fuel boost pumps on.
2—Galley power off; a.c. packs off.
3—Generator switches on.
4—Start levers idle.

8244. Which is indicated by illumination of the reverser operating light on the center instrument panel?

1—The clamshell doors are closed in reverse position.
2—Reverse power is being applied.
3—The reverser deflector door is unlocked.
4—The reverser system has operated inadvertently.

8245. Which is the source of power for mechanical actuation of the thrust reverser system?

1—Hydraulic pressure.
2—High-pressure bleed air.
3—Low-pressure bleed air.
4—Engine lubrication system pressure.

8246. Which switch or control position is always required to activate the engine ignition system?

1—Starter switch in flight or ground.
2—Continuous ignition switch on.
3—Start lever out of CUTOFF position.
4—Forward thrust lever in IDLE position.

8247. Which is a normal indication on the engine oil temperature gauge as engine power is changed?

1—Temporary decrease of temperature when thrust is reduced.
2—Temperature following thrust changes with no lag.
3—Temperature remaining absolutely steady despite large thrust changes.
4—Temporary increase of temperature when thrust is reduced.

8248. What would be an indication that the first stage of the two-stage engine-driven fuel pump has failed?

1—Slow acceleration during start.
2—No increase in oil temperature when fuel heat is being used.
3—Unable to develop takeoff EPR.
4—No fuel flow indication after start.

8249. What may excessive use of fuel heat cause?

1—Fuel flow fluctuations.
2—Fuel temperature exceeding limits.
3—High or fluctuating oil pressure.
4—Higher than normal oil temperature.

8250. Which engine indications are available during a battery start?

1—EPR and fuel flow.
2—N_1 and N_2 only.
3—Oil pressure gauges only.
4—N_1, N_2, and EGT.

8251. During a battery start, which features are available?

1—EGT and RPM indicators; high-energy ignition.
2—Duct pressure, EGT, and RPM indicators; high-energy ignition.
3—Oil pressure and EGT indicators; low-energy ignition.
4—EPR, EGT, and RPM indicators; low-energy ignition.

8252. The engine pressure ratio gauge indicates which of the following comparisons?

1—Combustor discharge pressure to inlet guide vane pressure.
2—Turbine discharge differential pressure to turbine inlet differential pressure.
3—Turbine discharge pressure to engine inlet pressure.
4— Combustor discharge gauge pressure to engine inlet gauge pressure.

8253. How are the N_1 and N_2 engine compressors driven?

1—N_1 driven by 1st– and 2nd–stage turbines, N_2 driven by the aft stage turbines.
2—N_1 driven by the aft stage turbines, N_2 driven by 1st– and 2nd–stage turbines.
3—N_1 and N_2 driven together by all turbines through an interconnect drive gear.
4—N_1 driven by the aft stage turbines, N_2 driven by the 1st–stage turbine.

8254. What action should be taken during the No. 1 engine strut overheat procedure? (See Figure 8.)

1—No. 1 engine fire switch – pull.
2—Right pack switch – off.
3—Both wing anti–ice switches – open.
4—No. 1 engine bleed air switch – close.

8255. Which condition is indicated when an engine strut overheat light is illuminated? (See Figure 8.)

1—Excessive pressure in the engine bleed air system.
2—Excessive temperature in the engine fan air supply.
3—Fire in the engine pylon area.
4—Pneumatic or anti–ice system duct leakage.

8256. Which action should be taken if an overheat condition in the lower aft body is indicated? (See Figure 8.)

1—Aft cabin zone temperature switch – off.
2—Cargo heat outflow switch – open.
3—Engine No. 2 inlet anti–ice switch – close.
4—Lower cargo fire extinguisher – discharge.

8257. What is indicated when the engine No. 2/APU bleed high–temperature light comes on? (See Figure 8.)

1—Excessive engine No. 2 bleed or APU bleed air temperature.
2—Excessive engine No. 2 bleed air temperature only.
3—Engine No. 2 bleed valve has been closed to correct a high temperature.
4—Engine No. 2 and APU bleed valves have been closed to correct a high temperature.

8258. What is indicated when engine No. 1 bleed air trip–off light is illuminated? (See Figure 8.)

1—The left pack valve has closed.
2—The air mix valve has gone full–cold.
3—The engine No. 1 bleed valve has closed.
4—Engine No. 1 bleed air is excessively hot and the valve should be manually closed.

8259. How should the pneumatic system be set to use a ground cart source to start the engines? (See Figure 8.)

1—Engines Nos. 1 and 3 bleed switches open; engine No. 2 bleed switches right – open; left – closed.
2—All engine bleed switches closed; one or both pack switches on.
3—Engine bleed switches open one at a time as the engine is selected for starting; others closed.
4—All engine bleed switches open; both pack switches off.

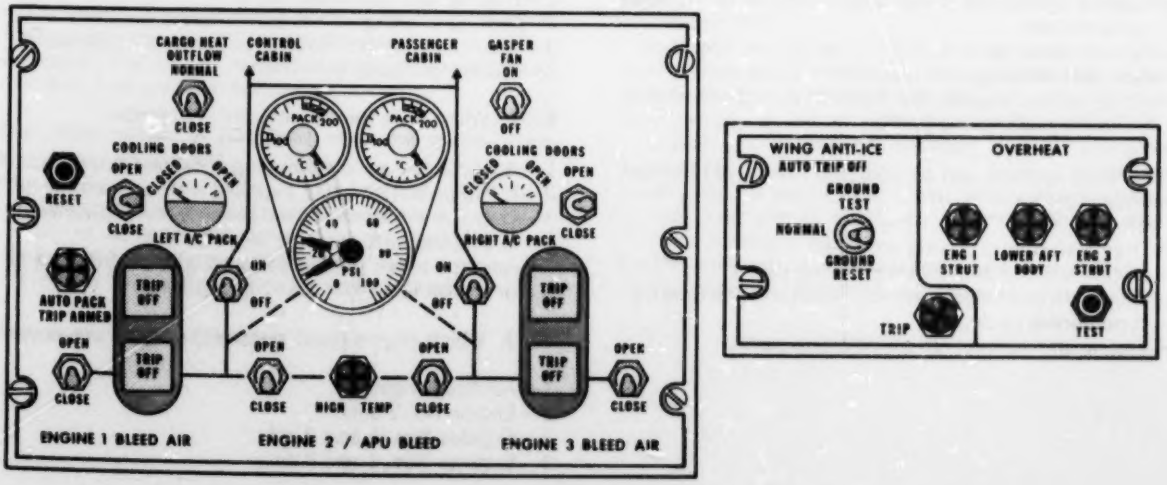

Figure 8

8260. What action should be taken if No. 3 engine strut overheat light remains on after the wing anti-ice is turned off and the bleed valve has been closed?

1—Increase engine RPM to move more N_1 cooling air.
2—Discharge a fire extinguisher to the affected area.
3—Close the throttle; if the light remains on, use the engine failure.
4—Shut down the engine by closing the throttle.

8261. What action should be taken by the flight engineer if the engine No. 1 strut overheat light illuminates?

1—Engine No. 1 inlet anti-ice switch – close.
2—Cargo heat outflow switch – close.
3—Engine No. 1 fire switch – pull.
4—Wing anti-ice switches – close all switches.

8262. Which action must be taken to reset the APU system after the APU bleed annunciator illuminates?

1—Press the APU bleed light cover.
2—All engine bleed switches and pack switches off.
3—Press the pneumatic system reset button.
4—Both engine No. 2/APU bleed switches close.

8263. Which action should be taken if the APU bleed annunciator light is on?

1—APU fire switch – pull.
2—Pack switches – both open.
3—Engine No. 2/APU bleed switches – close.
4—Cabin temperature control – manual cool.

8264. A rapid decompression was caused by a bleed trip. What is the corrective action?

1—Turn off both pack switches.
2—Open the cargo heat outflow switch.
3—Select at least two operating bleed air sources.
4—Open, then close the tripped pack switch.

8265. Which is the primary use of engine No. 2 bleed air?

1—Operate one pack when engine No. 1 or 3 bleed system is off.
2—Operate either pack during normal ground operation.
3—Operate both packs simultaneously in the air.
4—Assist either engine No. 1 or 3 to provide double bleed pressure to one pack.

8266. What systems can be operated from a ground cart pneumatic source?

1—Engine starting and wing anti-ice.
2—Engine starting and air-conditioning packs.
3—Engine starting, engine anti-ice, wing anti-ice, and air-conditioning packs.
4—Engine anti-ice and air-conditioning packs.

8267. How should the pneumatic system be set to use the APU for engine starting?

1—Engine bleed switches open one at a time as the engine is selected for starting; others closed.
2—All engine bleed switches open; both pack switches off.
3—Engines Nos. 1 and 3 bleed switches open; engine No. 2 bleed switches right – closed; left – open.
4—All engine bleed switches open; both pack switches on.

8268. Which type pack operation is not a recommended procedure?

1—Operating both packs from a ground cart source.
2—Using the APU and flow multiplier to supply both packs.
3—Using No. 2 engine bleed to operate the right pack.
4—Operating one pack from two bleed sources.

8269. When the reset switch is depressed, which systems will reset if temperatures have decreased below the trip-off point?

1—Engine No. 2 bleed and anti-ice.
2—Engines Nos. 1, 2, and 3 bleeds.
3—Engines Nos. 1 and 3 bleeds; anti-ice and the packs.
4—Engines Nos. 1 and 3 bleeds and the packs.

8270. Which action should be taken to close the APU bleed air valve with the APU running?

1—Position the left engine No. 2/APU bleed switch – closed.
2—Position both engine No. 2/APU bleed switches – closed.
3—Position either the left or right engine No. 2/APU bleed switch – closed.
4—Position both pack valve switches – closed.

8271. Which action would cause the flow multiplier to stop supplying air for the air-conditioning system?

1—Placing both pack switches on.
2—Placing one engine No. 2/APU bleed switch to close.
3—Disconnecting the external pneumatic cart hose.
4—Placing one pack switch off.

8272. When does the flow multiplier operate?

1—Anytime two air-conditioning packs are being used.
2—If two packs are being supplied with air from the APU.
3—Only if the flow multiplier switch is on and either pack is supplied with air from the APU.
4—Anytime either pack is supplied with air from the APU or a ground air-conditioning source.

8273. Which engine bleed system(s) use(s) a pre-cooler?

1—All three engines.
2—Engine No. 2 only.
3—Engines Nos. 1 and 2 only.
4—Engines Nos. 1 and 3 only.

8274. Which unit uses engine fan air as a heat exchange medium?

1—Bleed air pre-cooler.
2—Air-conditioning pack heat exchanger.
3—Hydraulic fluid heat exchanger.
4—Constant-speed drive oil cooler.

8275. When will 13th-stage bleed air be supplied to the air-conditioning system?

1—Anytime No. 2 engine bleed is used to supply one pack.
2—When No. 1 or 3 engine bleed systems are being used to provide anti-ice as well as air-conditioning air.
3—Anytime No. 2 engine bleed is used to supply both packs.
4—When No. 1 or 3 engine 8th-stage bleed air is insufficient for normal pack operation.

8276. After loss of all generators, what electrically-driven flight instrument(s) would be available prior to switching essential to STBY?

1—Turn and bank indicator.
2—Standby horizon.
3—Horizontal situation indicator.
4—Airspeed/Machmeter and altimeter.

8277. Which component(s) is(are) protected by the wing anti-ice system in addition to the wing leading edges, slats, and certain leading edge flaps?

1—Aft flap leading edges.
2—Upper VHF antenna.
3—Empennage.
4—Engine cowling leading edges.

8278. Which inputs are recorded on the voice recorder?

1—Captain, first officer, and flight engineer microphones; passenger address (PA) handset; and flight attendant handsets.
2—Both pilot microphones, ATC communications, and all general flight deck conversation.
3—All flight deck crewmember audio panels and passenger address (PA) microphones.
4—Captain, first officer, and flight engineer audio panels; and cockpit area microphone.

8279. Which signal is generated when the ground crew call button is depressed?

1—Flashing light in the main gear well.
2—Horn in the nose gear well.
3—Alarm bell in the main gear well.
4—Flashing light and chime in the nose gear well.

8280. Which control position is necessary to communicate with ground maintenance personnel from the cockpit?

1—Ground crew call button must be held on.
2—One VHF NAV COM must be on with 121.5 MHz selected.
3—Service interphone switch on the flight engineer's panel must be on.
4—Audio selector panel must be set for flight interphone.

8281. Selecting flight interphone on the flight engineer's audio selector panel provides communication with

1—ground service personnel and all crewmembers.
2—flight deck crewmembers and cabin attendants.
3—flight deck crewmembers.
4—cabin attendants and mechanics.

8282. Which radar mode selection is used to monitor heavy storm areas?

1—Test.
2—MAP.
3—Contour.
4—Standby.

8283. Which positions of the weather radar mode selector are safe to use during refueling or in congested ramp areas?

1—Test or standby.
2—Standby or contour.
3—Standby, normal, or test with antenna tilt 15° down.
4—Normal contour, or MAP with antenna tilt 15° up.

8284. Which adjustment can be made on the radio altimeter?

1—Altimeter setting.
2—Barometric pressure.
3—Airport elevation.
4—Decision height.

8285. What is the purpose of the instrument comparator warning system?

1—Provides visual and aural warnings when the airplane departs from a selected altitude.
2—Provides a visual light signal when there is a significant difference between certain instrument indications.
3—Provides a visual light signal which shows which of two instruments (captain's or first officer's) are in error beyond tolerance.
4—Provides an aural warning when any flight or navigation instrument has lost power.

8286. Which system provides a warning when the airplane has an altitude loss after takeoff before reaching 700 ft. AGL?

1—Altitude alert system.
2—Ground proximity warning system.
3—Radio altimeter.
4—Instrument comparator warning system.

8287. Which pressurization limitations are applicable for a cracked windshield?

1—Outer pane only – 5 PSI; inner pane only – normal operation; both panes – 2 PSI.
2—Outer pane only – normal operation; inner pane only – normal operation; both panes – 1 PSI.
3—Outer pane only – normal operation; inner pane only – 5 PSI; both panes – 2 PSI.
4—Outer pane only – 5 PSI; inner pane only – 2 PSI; both panes – 1 PSI.

8288. Under which condition should the cockpit window heat be off during flight?

1—During takeoff with ambient temperature 80° F or hotter.
2—When an inner pane of glass has been cracked.
3—At all times below 10,000 ft.
4—When cruising with ambient temperature 10° C above standard or hotter.

8289. What is the approximate maximum altitude to maintain a 10,000–foot cabin altitude when pressurization is limited because the inner and outer panes of the windshield are cracked?

1—10,000 ft.
2—15,000 ft.
3—20,000 ft.
4—25,000 ft.

8290. What is the approximate maximum altitude to maintain a 10,000–foot cabin altitude when pressurization is limited because the inner pane of the windshield is cracked?

1—15,000 ft.
2—20,000 ft.
3—25,000 ft.
4—30,000 ft.

8291. What is indicated when a cockpit window overheat light illuminates?

1—The window has overheated and power should be removed.
2—The window has overheated and power has been removed.
3—A window is reaching the maximum heat limits and power to that window should be reduced.
4—A window is reaching the maximum heat limits and power to all windows should be reduced.

8292. Which restriction is applicable when the window heat switch is placed off because of an uncontrollable window overheat condition?

1—Reduce cabin differential pressure to zero.
2—Reduce airspeed to 250 knots above 14,000 ft.
3—Reduce airspeed to 250 knots below 10,000 ft.
4—Increase cabin pressure to 10,000 ft.

8293. Which action should be taken if the engine anti–ice cowl valve fails open when operating at a TAT of 10° or greater?

1—Maintain a minimum thrust of 75 percent N_1 on the affected engine.
2—Limit thrust of the affected engine to 80 percent N_1.
3—Close the engine bleed air switches.
4—Trip the circuit breaker associated with the failed valve to permit the valve to close by pneumatic pressure.

8294. What happens if the wing anti–ice automatic trip–off system actuates?

1—Three engine bleed shutoff valves close.
2—Wing anti–ice switches trip to CLOSED position.
3—All wing anti–ice valves close.
4—The automatic trip–off light goes out.

8295. Which condition causes illumination of the wing anti–ice automatic trip–off light (flight engineer's upper panel)?

1—Increase of cabin pressure due to ruptured anti–ice ducting.
2—Thrust loss of any engine with the airplane in takeoff configuration.
3—Overheat in the wing anti–ice duct.
4—Rapid increase of cabin temperature due to an anti–ice air leak in a pressurized area.

8296. What would be the first required action if the anti–ice duct overheat light illuminated during cruise flight?

1—Retard all throttles until the light goes out.
2—Check temperatures on the duct temperature gauge.
3—Discontinue use of engine anti–ice.
4—Discontinue use of wing anti–ice.

8297. Which action should be taken if engine No. 3 wing anti–ice valve fails closed when wing anti–ice must be used?

1—Limit thrust on engine No. 3 to 80 percent N_1.
2—Maintain a minimum thrust on engine No. 3 of 75 percent N_1.
3—Maintain a minimum thrust on engine No. 1 of 75 percent N_1.
4—Limit thrust on engine No. 1 to 80 percent N_1.

8298. When is overheat protection provided for the wing anti-ice system?

1—When the wing anti-ice switch is on.
2—During ground test.
3—When airspeed is below 150 knots.
4—When the wing anti-ice valves are full open.

8299. When engine icing is suspected during flight, normal procedure is to

1—turn anti-icing on, then turn engine ignition on.
2—turn engine ignition on, then turn anti-icing on.
3—limit the use of anti-icing for a maximum of 10 minutes.
4—turn engine ignition off after 10 minutes of operation.

8300. Which are indications that ice may be forming in the engine inlet?

1—Ice detector light on or decreasing fuel flow.
2—Ice forming on unheated cockpit windows or surging N_1 RPM's.
3—Ice forming on the windshield wiper components or erratic EPR's.
4—Ice forming on the windshield wiper blade or low EPR's.

8301. What precaution should be observed prior to turning on engine anti-icing during icing conditions?

1—Turn off continuous ignition.
2—Place the starter switch to normal.
3—Turn on continuous ignition.
4—Reduce power until engine RPM stabilizes.

8302. When should rain repellent be used?

1—If temperature plus dew point is 78° F or less.
2—Only when wipers are inoperative.
3—When wipers are inadequate to remove water.
4—If rain is heavy, only once each hour.

8303. Which precaution should be used when applying rain repellent during medium or heavy rain?

1—Apply to second windshield only after repellency is established on the first windshield.
2—Do not use windshield wipers after repellent has been applied.
3—Use wipers at the slowest speed and apply to all windshields simultaneously.
4—Do not apply repellent to a windshield more than once per flight.

8304. What procedure applies to using the liquid type rain repellent system?

1—Depress the right and left buttons together and hold until flow starts on both windshields.
2—Do not use on a dry windshield or when the rain is slight.
3—Operate wipers, then depress and hold either right or left button until rain clears from the windshield.
4—do not use while the aircraft is on the ground.

8305. Which position of the windshield wiper switch is used to stow the blade away from the line of vision?

1—Off.
2—Reset.
3—Park.
4—Retract.

8306. For what purposes are the windows in the flight compartment heated?

1—Deicing, defogging, and increased resistance to cabin pressures.
2—Anti-icing, bird proofing, and increased resistance to external dynamic air pressures.
3—Anti-icing, defogging, and bird proofing.
4—Deicing, anti-fogging, and preventing flight compartment heat radiation to the atmosphere.

8307. What is the purpose of heating cockpit windows prior to all takeoffs?

1—Heat removes moisture from between the vinyl layers thereby improving visibility.
2—The application of heat removes the frost and ice accumulation from all cockpit windows.
3—Heat is applied prior to takeoff because the cold windows would crack if heat were applied at altitude.
4—The application of heat assists in making the windows shatterproof.

8308. Normal operation of pitot heat is

1—off until airborne, then on for the remainder of the flight.
2—on from before takeoff to after landing.
3—on from takeoff to 10,000 ft., then off.
4—on if OAT is below 5° C (41° F) with visible moisture, otherwise off.

8309. Which instrument is affected when the pitot/static heat system is turned on during the preflight check?

1—Static air temperature.
2—Mach/airspeed indicator.
3—Instantaneous vertical-speed indicator.
4—Total air temperature.

8310. Which units are protected when the pitot/static heat system is turned on?

1—Pitot tubes, static ports, elevator pitot probes, and temperature probe.
2—Pitot/static probes, rudder and elevator pitot probes, and fluid drains.
3—Pitot tubes, static ports, elevator pitot/static probes, and fluid drains.
4—Pitot tubes, static ports, rudder static probe, and temperature probe.

8311. What is indicated by the illumination of an engine anti-ice valve position light?

1—The selected valve is open or closed, not in agreement with the switch position.
2—The selected valve is open.
3—The selected valve is closed.
4—The selected valve is open or closed, in agreement with the switch position.

8312. Which engine anti-ice valves are closed by pulling an engine fire switch?

1—Cowl anti-ice valve – engine No. 1, 2, or 3.
2—Cowl anti-ice valve – engine No. 2 only.
3—Right and left inlet anti-ice valves – engine No. 1, 2, or 3.
4—Right and left inlet anti-ice valves – engine No. 2 only.

8313. The pulling of which engine fire switch(es) will close a wing anti-icing shutoff valve?

1—Engine No. 1, 2, or 3 fire switches.
2—Engine No. 1 or 2 fire switches only.
3—Engine No. 2 fire switch only.
4—Engine No. 1 or 3 fire switches only.

8314. Which statement is appropriate for aircraft utilizing the liquid type rain repellent system?

1—Do not use rain repellent while windshield heat is in HIGH position.
2—If rain repellent is inadvertently applied to a dry windshield, do not operate the wipers.
3—Depress both rain repellent buttons simultaneously and hold until flow starts.
4—Do not use while aircraft is on the ground.

8315. Which action should be taken if the anti-ice duct overheat light is on while not in actual icing conditions? (See Figure 9.)

1—If No. 1 temperature indication is high – No. 1 engine anti-ice OFF.
2—If No. 2 temperature indication is high – No. 2 engine anti-ice OFF.
3—If No. 2 temperature indication is high – No. 2 wing anti-ice OFF.
4—If No. 3 temperature indication is high – No. 3 engine anti-ice OFF.

8316. What is indicated when the anti-ice duct overheat light is on? (See Figure 9.)

1—Excessive temperature in the pneumatic system duct.
2—Excessive temperature in a wing duct; or engine No. 2 cowl duct.
3—Excessive temperature in a wing duct; or engine No. 1, 2, or 3 cowl duct.
4—Excessive temperature in the duct indicated by the duct temperature selector.

8317. What happens when the windshield heat switch is placed to the OFF/RESET position? (See Figure 9.)

1—Power removed, and circuit breaker reset.
2—Overheat light out, and circuit breaker reset.
3—Overheat light out, power light on, and power on.
4—Power removed, overheat light out, and system reset.

8318. Which position of the window heat switch is required when using the window heat test switch? (See Figure 9.)

1—On for overheat test; off for power on test.
2—Off for overheat test; on for power on test.
3—On for both overheat test and power on test.
4—Off for both overheat test and power on test.

8319. With window heat switches on, which indication is correct for the window heat preflight check when the test switch is placed in overheat? (See Figure 9.)

1—Power lights off and overheat lights on.
2—Window heat switches trip off; all lights on.
3—Power lights on and overheat lights on.
4—Window heat switches trip off; all lights off.

8320. How is normal operation of the pitot/static heat system verified? (See Figure 9.)

1—Pitot/static heat light is illuminated when all elements are receiving electrical power.
2—Observe current flow indications on the left and right pitot/static ammeters.
3—Observe d.c. voltage drop when the switch is turned on.
4—Pitot/static instruments fluctuate when the switch is turned on.

8321. Which is an indication that the wing anti-ice system valves are operating properly when anti-ice switches are turned on? (See Figure 9.)

1—Both valve lights extinguish and reilluminate.
2—Increase of temperature on the wing A/I temperature gauge.
3—Momentary drop of duct air pressure.
4—Slight decrease of EPR on all engines.

8322. What is indicated by illumination of the engine No. 1 wing anti-ice valve position light? (See Figure 9.)

1—Both wing anti-ice valves in engine No. 1 agree with the engine No. 1 wing anti-ice switch.
2—Both wing anti-ice valves in engine No. 1 are moving to the selected position.
3—One wing anti-ice valve is not in agreement with the engine No. 1 wing anti-ice switch.
4—All wing anti-ice valves in engine No. 1 are open.

8323. What is indicated on the anti-ice duct temperature gauge when selected to engine No. 3? (See Figure 9.)

1—Temperature of the engine No. 3 cowl anti-ice air.
2—Temperature of the wing anti-ice right supply duct.
3—Temperature of the engine No. 3 inlet anti-ice air.
4—Temperature of the right pneumatic manifold air.

8324. During the hydraulic system leak procedure, the system A fluid shutoff switches are closed. Which part of the system is shut off by this step?

1—Output from all pumps.
2—Return line to the reservoir.
3—Input to the engine-driven pumps.
4—Main pressure line to the using units.

8325. When the landing gear is extended by the manual system, the

1—main gear doors will remain open after gear extension.
2—main gear doors will close after gear extension.
3—gear handle should be placed in the off position after the gear is locked down.
4—gear handle should be placed in the neutral position after the gear is locked down.

8326. The hydraulic pressure reading is taken from the air side of a 1,000 PSI charged hydraulic accumulator. What would the cockpit gauge read if the accumulator lost all of its air charge with normal (3,000 PSI) pressure on the system?

1—Zero.
2—1,000 PSI.
3—3,000 PSI.
4—4,000 PSI.

8327. During manual landing gear extension, where should the landing gear handle be placed?

1—Manual down.
2—Down.
3—Bypass.
4—Off.

8328. Which events can cause the system A low-pressure light to illuminate?

1—Pump pressure low, fluid shutoff switch closed, or pump switch on.
2—Pump failure, pump switch off, or fluid shutoff switch closed.
3—Engine fire switch pulled, pump pressure low, or pump switch off.
4—Pump failure, pump switch on, or engine fire switch pulled.

8329. What is indicated by illumination of hydraulic system A and B overheat lights?

1—Return fluid overheat in system A; one or both system B pumps overheated.
2—Fluid overheat in system A reservoir.
3—Difference between outlet and inlet fluid temperature at cooler excessive.
4—Fluid overheat in system A reservoir; one or both system B pumps overheated.

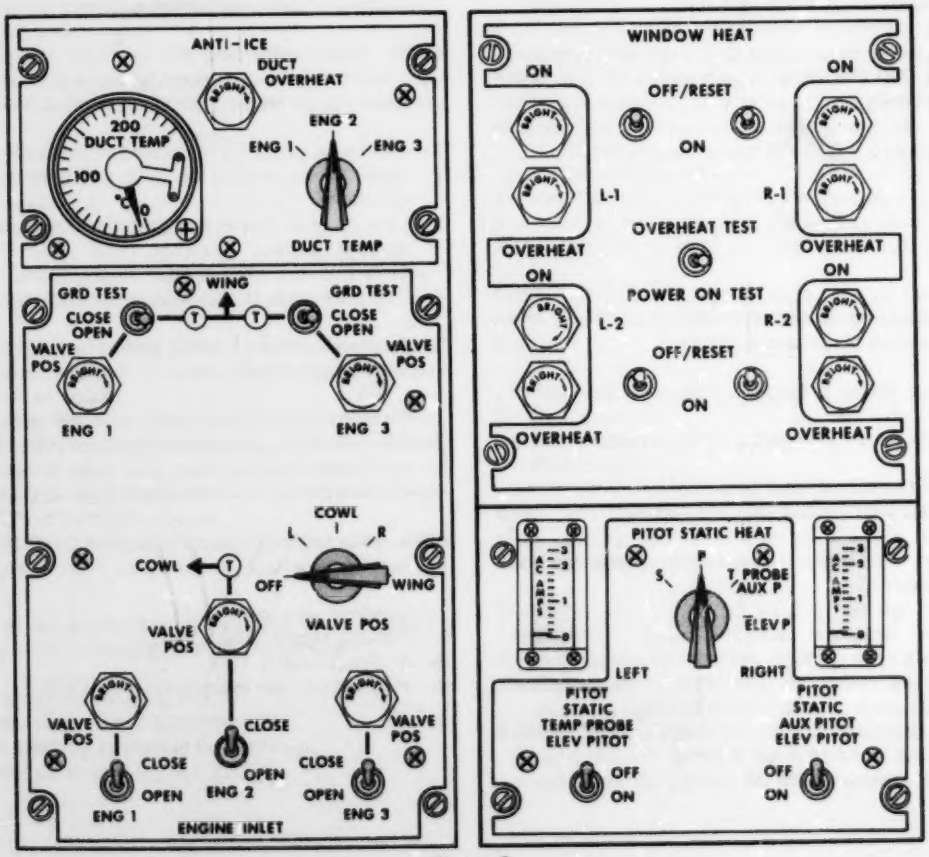

Figure 9

8330. Which action should be taken if the hydraulic system B overheat light is illuminated?

1—Turn off both electric-driven pumps.
2—Turn off one pump; if the light goes out, do not turn off the other pump.
3—Turn off one pump; if the light goes out, turn off the other pump.
4—Increase fuel flow through the fluid to fluid heat exchanger (cooler).

8331. What is the indication that the landing gear is safe and the antiskid is prepared for landing?

1—Red door lights on, green gear lights on, and antiskid annunicators REL.
2—Red door lights out, green gear lights out, and antiskid annunciators on.
3—Red door lights out, green gear lights on, and antiskid annunciators REL.
4—Red door lights on, green gear lights on, and antiskid annunciators on.

8332. Which is the normal indication of the amber annunciator lights (flight engineer's lower panel) when the airplane is in landing configuration?

1—Gear door lights out; tailskid light out.
2—Gear door lights on; tailskid light on.
3—Gear door lights out; tailskid light on.
4—Gear door lights on; tailskid light out.

8333. The hydraulic accumulator has a nitrogen pressure precharge of 1,000 PSI. The system pressure gauge is located on the nitrogen side of the accumulator. What is the indication on the gauge when the pumps supply hydraulic pressure at 3,000 PSI to the accumulator?

1—1,000 PSI.
2—2,000 PSI.
3—3,000 PSI.
4—4,000 PSI.

8334. Which condition is required before checking the lockout deboost valve for proper servicing?

1—Brake gauge above precharge pressure and brakes off.
2—Brake gauge above precharge pressure and parking brake set.
3—Main antiskid switch off and brakes off.
4—Parking brake light on and antiskid switch off.

8335. How can the brake accumulator precharge be checked on preflight?

1—Check the pressure gauge attached to the accumulator on the external preflight inspection.
2—Hold the brake pedals on and observe the pressure immediately before a sudden drop to zero.
3—Repeatedly actuate the brake pedals until brake pressure drops to a stabilized reading.
4—Observe the pressure with all pumps off and brakes off.

8336. What action should be taken when the airplane is being towed with the torsion links connected?

1—Open the bus tie breakers so each generator is on its respective load bus.
2—Depressurize both system B hydraulic pumps.
3—Depressurize both system A hydraulic pumps.
4—Open the brake interconnect valve.

8337. Which is an indication of proper operation of the antiskid system during preflight with the antiskid switch on, and the test switch placed to INBD?

1—Outboard indicators – ON; inboard indicators – blank.
2—Inboard indicators – REL; outboard indicators – blank.
3—Inboard indicators – ON; outboard indicators – blank.
4—Outboard indicators – REL; inboard indicators – blank.

8338. During flight with the landing gear and landing gear lever down, the antiskid system

1—permits automatic brake application.
2—permits full brake application by use of the brake pedals.
3—prevents brake application.
4—prevents full brake application but permits sufficient pressure to prevent wheel rotation.

8339. While performing the preflight cockpit inspection, you observe the parking brake light on and brake pressure gauge reading 500 PSI. What does this indicate?

1—Hydraulic pressure is applied to the brakes.
2—Both brake pedals on one side are in the parked position.
3—One or both brake pedals on one side are depressed to the parked position, and 500 PSI hydraulic pressure is applied to the brakes.
4—The parking brake lever is in the parked position.

8340. How is main landing gear wheel rotation normally stopped after takeoff?

1—Tires contact friction bands in wheel wells.
2—Toe pedals are applied before gear retraction.
3—Automatic braking when gear lever is placed off.
4—Automatic braking when gear lever is placed up.

8341. Which control position applies automatic braking to the main gear wheels?

1—Landing gear lever – UP.
2—Parking brake lever – PULL.
3—Antiskid switch – ON.
4—Hydraulic brake interconnect – OPEN.

8342. What trouble is probable if a hydraulic system pressure gauge indicates zero pressure during cruising flight?

1—Hydraulic pump failure.
2—Total loss of all fluid.
3—Loss of accumulator precharge.
4—Loss of bleed air reservoir pressurization.

8343. During cruise flight, the brake pressure gauge indicates zero. Other hydraulic system gauges have normal indications and no amber or red indicator lights are on. What condition is indicated?

1—Electrical power to both hydraulic pumps has been interrupted.
2—Accumulator preload has been lost.
3—Landing gear retraction has shut off system pressure to the brakes in the normal manner.
4—Fluid has been lost to the point that all lockout cylinders have bottomed out.

8344. Which is a feature of the pneumatic emergency brake system?

1—Differential braking is available with the pneumatic system.
2—The pressure to the brakes cannot be regulated with the pneumatic system.
3—Pneumatic braking locks all the main gear wheels.
4—The antiskid system is not effective when pneumatic braking is utilized.

8345. Which item prevents system pressure loss in the event of brake line failure at the inlet to the shuttle valve?

1—Antiskid valve.
2—Lockout debooster.
3—Power brake control.
4—Gear down sequence valve.

8346. How is braking action accomplished when using the emergency pneumatic system?

1—By positioning the brake interconnect valve on the flight engineer's panel to emergency and using the brake pedals as usual.
2—By positioning the pneumatic brake control valve full open and allowing the antiskid system to relieve excess pressure.
3—By opening the pneumatic brake control valve and using the brake pedals as usual.
4—By opening the pneumatic brake control valve and metering pressure to all brakes.

8347. Which is an indication, in addition to the green lights, that the main landing gear is locked down?

1—Antiskid indicators showing REL.
2—Landing gear door warning light(s) off.
3—Nosewheel steering system is pressurized.
4—Landing gear door warning light(s) on.

8348. Which is the normal position of the landing gear lever and condition of the gear hydraulic system during cruise flight?

1—Gear lever up; hydraulic pressure is maintained in the gear system.
2—Gear lever off; hydraulic pressure to the gear system is removed.
3—Gear lever off; hydraulic pressure is blocked to the gear system, except to the in-flight brakes.
4—Gear lever up; hydraulic pressure to the gear system is removed.

8349. Which rule applies to the flap-operated landing gear warning device?

1—May not use part of the throttle actuated system.
2—Must have a horn silencing switch on the control pedestal.
3—Must actuate only when at least one throttle is moved to idle position.
4—May not have a manual shutoff.

8350. When can the pilot's warning horn cutout be used to silence the warning horn?

1—If the gear handle is out of the down detent, with the aircraft on the ground.
2—If any thrust lever has been closed; gear not down.
3—When the wing flaps are extended beyond 35°; gear not down.
4—If the cabin altitude exceeds 10,000 ft.

8351. If the flaps are extended to final landing configuration but the gear is not down and locked, the warning horn will sound

1—intermittently and cannot be silenced by the cutout.
2—steadily, until silenced by the cutout.
3—steadily, and cannot be silenced by the cutout.
4—intermittently, until silenced by the cutout.

8352. Which is the normal indication of the tailskid light when the landing gear selector is placed to the DOWN position?

1—On, then out.
2—Out, then on.
3—Remains on.
4—Remains out.

8353. What would the gear warning light indication be after landing gear extension, if the left main gear and door remained locked up?

1—Right gear and nose gear green lights on, and red door light on.
2—Only right gear and nose gear green lights on.
3—Right gear and nose gear green lights on, and left gear red light on.
4—Right gear and nose gear green lights on; red door light and left door amber light on.

8354. What action takes place regarding the main landing gear system when the landing gear lever is placed in the UP position?

1—Wheel rotation is stopped by automatic braking, the gear is retracted, then the doors are closed by bungee strut action.
2—The gear doors free-fall open, the gear retracts and mechanically pulls the gear doors closed when the gear contacts the uplock.
3—Sequence valves direct hydraulic pressure to open the gear doors, retract the gear, and then close the gear doors.
4—Wheel rotation is stopped by automatic braking, the gear is retracted, the gear doors are then closed hydraulically and locked by the lockout cylinders.

8355. What is the pressurization source for the system A reservoir?

1—Engines Nos. 2 and 3 bleed air.
2—Pneumatic system pressure.
3—System B return fluid.
4—Engines Nos. 1 and 2 bleed air.

8356. What is normal hydraulic system pressure and relief valve full open pressure?

1—2,000 PSI and 3,000 PSI.
2—3,000 PSI and 3,500 PSI.
3—3,000 PSI and 4,000 PSI.
4—3,250 PSI and 3,500 PSI.

8357. How is hydraulic fluid cooled in systems A and B?

1—System A – fuel-cooled heat exchanger; system B – pressurized reservoir.
2—System B – fuel-cooled heat exchanger; system A – pressurized reservoir.
3—Systems A and B – pressurized reservoir.
4—Systems A and B – fuel-cooled heat exchanger.

8358. Which engines drive variable displacement hydraulic pumps?

1—Engines Nos. 1 and 2.
2—Engines Nos. 2 and 3.
3—Engines Nos. 1, 2, and 3.
4—Engines Nos. 1 and 3.

8359. How much fuel should remain in each tank when automatic fuel shutoff occurs during fuel dumping?

1—1,250 lb.
2—2,500 lb.
3—3,000 lb.
4—3,500 lb.

8360. Which control setting is required during the fuel dumping procedure?

1—Boost pump switches – OFF.
2—Fuel feed – tank to engine.
3—Flaps – UP.
4—Cross-feed selectors – all OPEN.

8361. What procedure is used to dump fuel if the right nozzle valve fails to open?

1—Dump fuel from all tanks through the left nozzle.
2—Dump fuel from tanks Nos. 1 and 2, but not tank No. 3.
3—Dump fuel from tank No. 2, but not tanks Nos. 1 and 3.
4—Do not dump fuel.

8362. Which action should be taken if during dumping the fuel tank quantity decreases below 3,500 lb.?

1—Close the associated fuel dump nozzle switch.
2—Manually terminate dumping before the tank quantity reaches 2,500 lb.
3—Transfer fuel to the low tank by cross-feeding.
4—Turn off all boost pump switches for the tank.

8363. What is the correct sequence of switch positions to dump fuel?

1—Boost pumps off; dump nozzle valve switches open; dump valve switches open.
2—Dump chute extend; valve open; chute drain; chute retract.
3—Boost pumps on; dump valve switches open; nozzle valve switches open.
4—Nozzle switches open; cross-feeds open; dump valve switches open.

8364. What action should be taken if a fuel boost pump light comes on when the switch is on and usable fuel is in the tank?

1—Reset tripped circuit breaker; if it retrips, place pump switch off, and then all cross-feed valves open.
2—Cross-feed closed; operate tank to engine on other boost pump; leave affected pump switch on if circuit breaker has tripped.
3—Cross-feed open; pump switch off; reset tripped circuit breaker; pump switch on; if breaker retrips, place pump switch off.
4—Pump switch off; reset tripped circuit breaker, and hold on if required for high-power settings.

8365. Which operation is not possible in the event of the malfunction of both boost pumps in No. 3 tank?

1—Use of No. 3 tank fuel for tank-to-engine operation.
2—Fuel transfer to No. 3 tank.
3—Use of No. 3 tank fuel for No. 2 engine.
4—Operation of No. 3 engine from No. 2 tank.

8366. How should tanks be equalized if tank No. 1 has greater quantity than tank No. 3?

1—All cross-feed selectors OPEN; all boost pumps Nos. 1 and 2 ON; one boost pump No. 3 OFF.
2—Tanks Nos. 1 and 3 cross-feed selectors OPEN; tank No. 2 cross-feed selector OFF; all boost pumps Nos. 1 and 2 ON; all boost pumps No. 3 OFF.
3—All cross-feed selectors OPEN; one boost pump No. 1 ON; one boost pump No. 2 ON; one boost pump No. 3 OFF.
4—Tanks Nos. 1 and 3 cross-feed selectors OPEN; tank No. 2 cross-feed selector CLOSED; all boost pumps Nos. 1 and 2 ON; one boost pump No. 3 ON.

8367. Which procedure should be used to maintain an equal fuel balance when a fuel quantity gauge is inoperative?

1—All cross-feed valves – OPEN.
2—Adjust thrust as necessary to maintain even fuel flow readings.
3—Vary cross-feed valve position and boost pump operation to maintain balanced fuel flow readings at even EPR settings.
4—All boost pump switches – OFF.

8368. Cross-feed procedures are used to equalize laterally unbalanced fuel loads. Which action should be used to stop the flow of fuel from a tank with a low-fuel level?

1—Fore and aft boost pumps off.
2—Cross-feed valve closed.
3—Tank valve closed.
4—Engine fuel valve closed.

8369. Which tank(s) will supply the engines when all cross-feeds are open and all boost pumps are on? (Override pumps installed.)

1—Each tank feeds its own engine.
2—All tanks supply fuel equally.
3—All fuel will flow from the center tank.
4—All tanks feed all engines.

8370. What is the effect of having all boost pumps on and all cross-feed selectors open? (Override pumps installed.)

1—High-pressure fuel from tank No. 2 will prevent fuel flow from tanks Nos. 1 and 3.
2—Fuel from tank No. 2 will enter tanks Nos. 1 and 3.
3—Each tank will feed its respective engine because check valves prevent reverse fuel flow.
4—Pump output from tanks Nos. 1 and 3 will override the output of tank No. 2 and feed all engines.

8371. Which is an indication that fuel dumping from No. 3 tank has cut off as No. 3 dump valve switch is placed to closed? (See Figure 10.)

1—No. 3 fuel quantity stops decreasing at a high rate.
2—No. 3 flowmeter returns to a normal usage rate.
3—Fuel discharge from the No. 3 dump chute stops.
4—Right nozzle valve intransit light extinguished.

8372. What are the uses of the fuel dump controls? (See Figure 10.)

1—Fuel dump valve open allows fuel to be drawn from the tank during defueling.
2—Fuel dump valve open allows fuel to enter the dump manifold.
3—Fuel dump nozzle valve open allows fuel to enter the dump manifold.
4—Fuel dump nozzle valve open allows fuel to be drawn from the tank during ground transfer.

8373. During preflight inspection of the flight engineer's panel with external ground power available, you turn the fuel cross-feed selectors from open to closed and then back to open for each tank. When should the blue light associated with the cross-feed valve be on during this check?

1—When the valve and selector are synchronized in any position.
2—When the valve is open and the selector is in OPEN position.
3—When the valve is changing to either open or closed.
4—When the valve is closed and the selector is in CLOSED position.

8374. Which is an indication of proper operation when the fueling quantity indicator test switch at the fueling station control panel (right wing) is placed to the ON position?

1—All fuel quantity indicators drive toward zero.
2—Fueling station quantity indicators drive up scale; indicators on flight engineer panel drive toward zero.
3—All fuel quantity indicators drive up scale.
4—Fueling station quantity indicators drive toward zero; indicators on flight engineer panel drive up scale.

8375. Which procedure is used to transfer fuel from tank No. 1 to tank No. 2?

1—Tank No. 2 pumps OFF; Nos. 1 and 2 cross-feed valves OPEN; tank No. 1 pumps ON.
2—Tank No. 2 pumps OFF; all cross-feed valves OPEN; defueling valve OPEN.
3—Tank No. 2 pumps OFF; defueling valve OPEN; Tank No. 2 cross-feed valve OPEN; tank No. 1 dump valve OPEN; tank No. 1 pump ON.
4—Tank No. 2 pumps OFF; defueling valve OPEN; tank No. 1 cross-feed valve OPEN; tank No. 2 fueling valve OPEN; tank No. 1 pump ON.

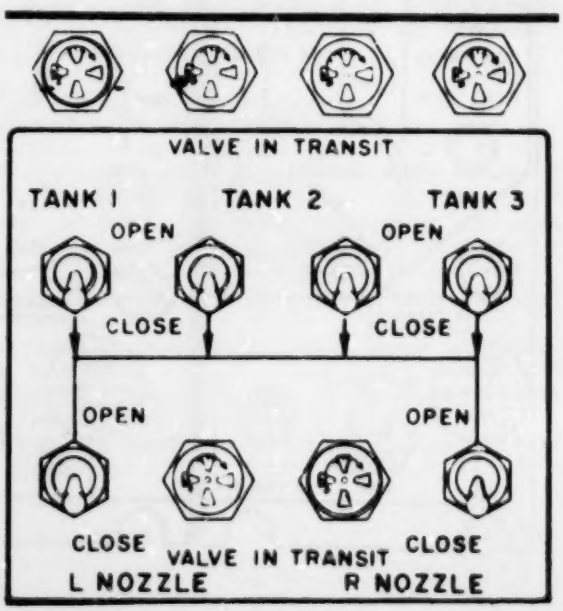

Figure 10

8376. Fuel tank boost pump pressure is a requirement for which operations?

1—Engine operation, tank–to–tank transfer, and pressure fueling.
2—Fuel dumping and tank–to–tank transfer.
3—Engine operation, APU operation, and suction defueling.
4—APU operation, fuel dumping, and pressure fueling.

8377. Which tank(s) has(have) filler ports for overwing fueling?

1—Nos. 1, 2, and 3.
2—No. 2 only.
3—Nos. 1 and 3 only.
4—Nos. 1 and 2 only.

8378. Which is a requirement for operation of the underwing fuel system?

1—Cross–feed valves OPEN.
2—Fuel quantity indicator bugs set for desired tank fuel level.
3—Fuel boost pumps ON.
4—External power connected or APU power available.

8379. What configuration should be used when setting the fuel panel for takeoff with an equal fuel load in each tank? (See Figure 11.)

1—All boost pumps ON, and all cross–feed valves CLOSED.
2—One boost pump ON in each tank, and all cross–feed valves OPEN.
3—All boost pumps ON, and No. 2 cross–feed valve OPEN.
4—All boost pumps ON in No. 2 tank, and all cross–feed valves OPEN.

8380. What is indicated by lights on the fuel panel? (See Figure 11.)

1—Pump light on indicates pump is on; valve light on indicates valve is in transit.
2—Pump light on indicates low pump pressure; valve light on indicates valve is closed.
3—Pump light on indicates pump is on; valve light on indicates valve and switch positions agree.
4—Pump light on indicates low pump pressure; valve light on indicates valve and switch positions disagree.

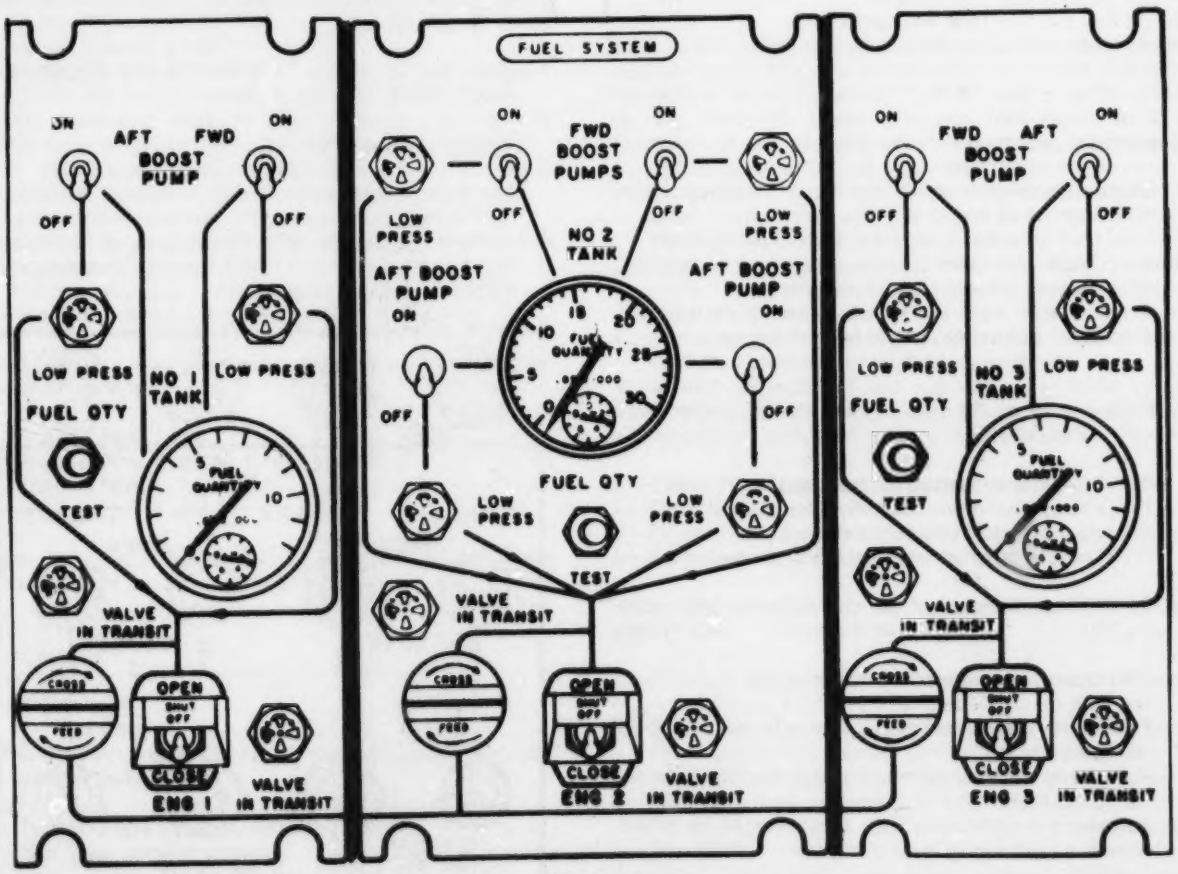

Figure 11

8381. What temperature(s) may be read on the fuel temperature gauge?

1—All main fuel filters and tank No. 1.
2—All fuel filters only.
3—Tank No. 3 only.
4—Tank No. 1 only.

8382. The fuel quantity indicator for the No. 1 tank indicates the

1—pounds of usable fuel in the tank based upon fuel temperature of 59° F.
2—total pounds of fuel in the tank regardless of fuel density.
3—pounds of usable fuel in the tank regardless of fuel density.
4—total gallons of fuel in the tank based upon 6.7 lb./gal. fuel density.

8383. What is the purpose of the repeat button on the flight recorder panel?

1—To recycle encoder.
2—To playback a previously recorded event.
3—To rewind tape.
4—To allow recorder to operate on APU power.

8384. The flight recorder automatically records the airplane's

1—airspeed, altitude, time, heading, and rate of climb or descent.
2—acceleration, indicated altitude, Mach, and compass heading.
3—course, altitude, Mach, vertical acceleration, and flight time.
4—indicated airspeed, pressure altitude, heading, vertical acceleration, and elapsed time.

8385. What is the relationship between static air temperature and ram air temperature in cruising flight at high altitude?

1—Static air temperature is always lower (colder) than ram air temperature.
2—Static air temperature minus ram air temperature equals true air temperature.
3—Ram air temperature plus true air temperature equals static air temperature.
4—Ram air temperature is always lower (colder) than static air temperature.

8386. Which type of temperature indication is provided by the total air temperature gauge?

1—Ambient air temperature.
2—Ram air temperature corrected for ram rise.
3—OAT plus ram rise.
4—OAT corrected for static system error.

8387. Which is a feature of the Mach/airspeed warning system?

1—The limiting Mach (M_{MO}) increases with altitude.
2—The limiting airspeed (V_{MO}) increases with altitude.
3—The warning can be silenced by a cutout switch.
4—The warning can be cut off by activating the yaw damper system.

8388. Which source operates the Machmeter?

1—Computed data from SAT/TAS indicator.
2—Air data computer.
3—Pitot/static pressure only.
4—Pressure altitude and ambient temperature corrections applied to indicated airspeed data.

8389. Which false reading would occur if the pitot system and its water drain were blocked by ice while the static system was unobstructed during a climb?

1—Indicated airspeed would decrease at constant power.
2—Indicated airspeed would increase at constant power.
3—Vertical speed indicator would remain at zero.
4—Altimeter indication would remain constant.

8390. During preflight, you check the static ports for being open and clean. With which systems are these ports associated?

1—Flight instruments, cabin pressure control, autopilot, and cabin altimeter.
2—Flight instruments, autopilot, cabin pressure control, and flight recorder.
3—Flight instruments, autopilot, flight recorder, and cabin altimeter.
4—Flight instruments, cabin pressure control, flight recorder, and cabin altimeter.

8391. Both the ram air input passage and the drain hole of a pitot system are blocked by ice. What erroneous indication will appear on the Machmeter when descending at a constant-thrust setting?

1—Remains fixed at a constant value.
2—Mach number gradually decreases.
3—Mach number gradually increases.
4—Drops to the minimum value shown on the indicator.

8392. In addition to the flight instruments, with which systems are the static ports associated?

1—Cabin pressure control, air data computer, and cabin altimeter.
2—Cabin pressure control, flight recorder, and cabin altimeter.
3—Air data computer, flight recorder, and cabin pressure warning switch.
4—Air data computer, cabin pressure control, and flight recorder.

8393. What would be the first indication of a leak in hydraulic system B? (See Figure 12.)

1—Drop on system B quantity indicator.
2—Drop on system A quantity indicator.
3—Illumination of system A low-pressure light.
4—Illumination of system B low-pressure light.

8394. If system A hydraulic pressure is lost during flight, how can the landing gear be extended? (See Figure 12.)

1—Normal system B operation or manual extension.
2—Manual extension procedures only.
3—Opening the ground interconnect valve to obtain system B pressure, and placing the gear lever down.
4—Opening the brake interconnect valve to obtain system B pressure, and placing the gear lever down.

8395. Which setting of the hydraulic pump switches is required at termination of the flight? (See Figure 12.)

1—B pumps on; A pumps off.
2—A pumps on; B pumps off.
3—All pumps on.
4—All pumps off.

8396. How can the standby hydraulic pump be turned on? (See Figure 12.)

1—Rotate the essential power switch to STBY.
2—Turn on the rudder system B hydraulic power switch, or select an inboard or outboard alternate flap switch down.
3—Turn off the rudder system A hydraulic power switch, or turn on the alternate flap master switch.
4—Turn both system B pump switches off and turn off the rudder system B power switch.

8397. Which condition is required for the opening of the hydraulic ground interconnect valve? (See Figure 12.)

1—Engine-driven hydraulic pump producing normal pressure.
2—APU on bus or external power plugged in.
3—Electric motor-driven hydraulic pump producing normal pressure.
4—Landing gear down, in the air or on the ground.

8398. If hydraulic system A fails, which units would be operative by using the standby pump and alternate flap system controls? (See Figure 12.)

1—Leading edge devices; ailerons; nose brakes; trailing edge flaps.
2—Nose gear steering; ground spoilers; lower rudder.
3—Leading edge devices down; lower rudder; trailing edge flaps.
4—Lower rudder; outboard spoilers; leading edge devices.

8399. What would be the result, if the standby hydraulic system pressure was lost after it had been used to extend the leading edge devices? (See Figure 12.)

1—Electrical actuators will keep the leading edge devices extended.
2—The leading edge devices would tend to blow up, as they do not lock down.
3—The leading edge devices would remain extended until retracted by the alternate flap system.
4—The leading edge devices would remain extended because they mechanically lock down.

8400. What could cause the flaps to stop when using the alternate flap switches? (See Figure 12.)

1—Loss of hydraulic pressure.
2—Excessive airspeed.
3—Asymmetric condition.
4—Loss of hydraulic fluid.

8401. Which indication signifies that the Mach/airspeed limit has been exceeded?

1—A steady bell rings.
2—An intermittent horn will sound.
3—A wailing horn (siren) will sound.
4—A clacker will sound.

8402. What precaution should be observed during the stab. trim check?

1—Do not operate manual trim with electric power on the airplane.
2—Do not operate the main electric trim with the autopilot engaged.
3—Do not operate the stab. cruise trim with the autopilot engaged.
4—Do not operate the captain's and first officer's main electric trim switches in opposite directions simultaneously.

8403. How is operation of the flight controls adjusted for high speed flight?

1—Rudder hydraulic pressure is increased.
2—Spoilers are locked out in faired position.
3—Outboard ailerons are locked out when flaps are up.
4—Pitch control reverts to the stabilizer with a fixed elevator.

8404. What is the basic procedure to be followed if an asymmetric flap condition occurs in flight?

1—Move the flaps to the full-up position electrically and leave them up.
2—Alternate flap operation of the inoperative set of trailing edge flaps should not be attempted.
3—Attempt to get the flaps to the selected position by any means possible.
4—Synchronize the flaps hydraulically, then position them electrically for landing.

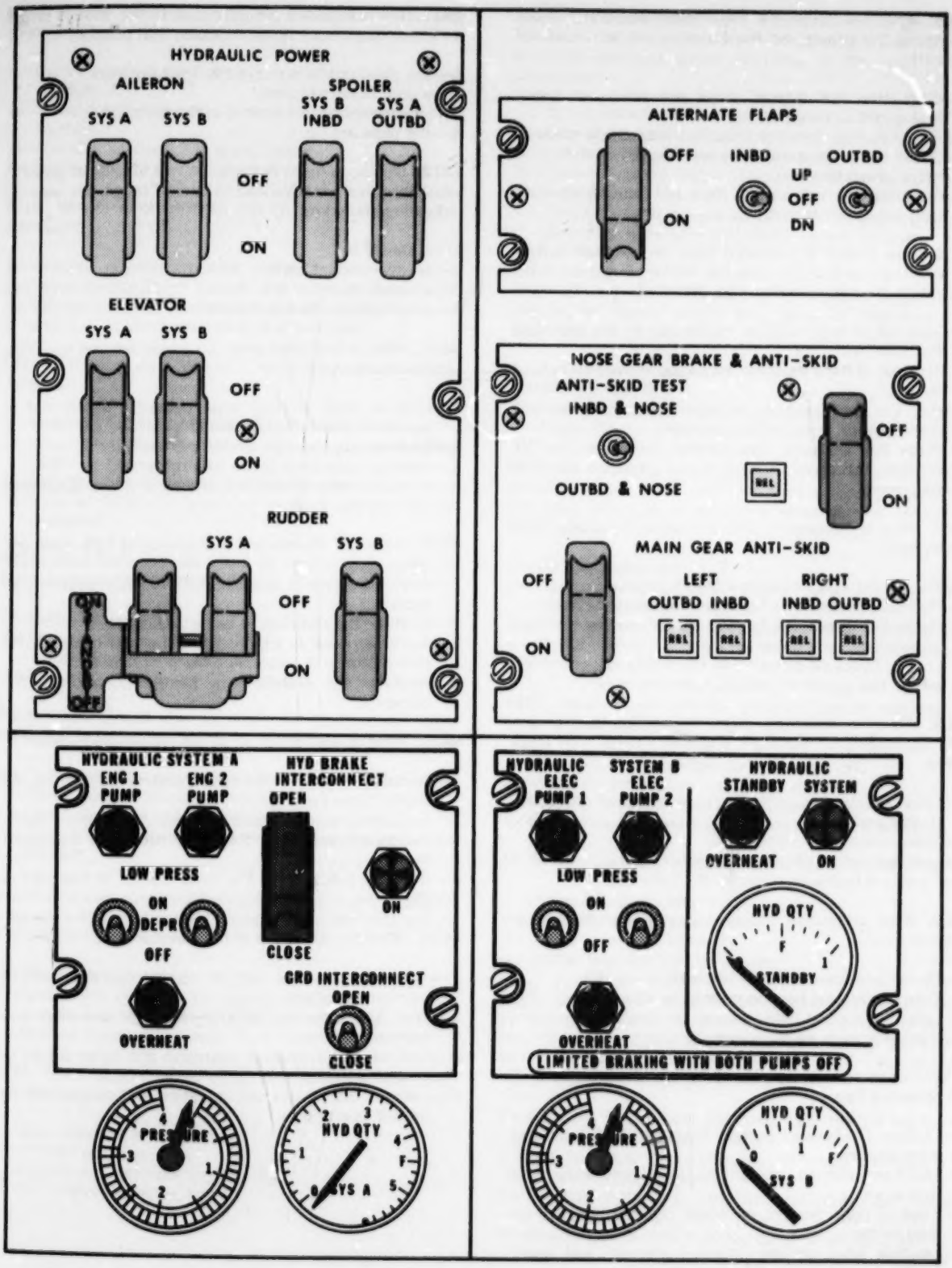
HYDRAULIC POWER
AILERON
SYS A
SYS B
SPOILER
SYS B INBD
SYS A OUTBD
OFF
ON
ELEVATOR
SYS A
SYS B
OFF
ON
RUDDER
SYS A
SYS B
OFF
ON
ALTERNATE FLAPS
OFF
ON
INBD
UP
OFF
DN
OUTBD
NOSE GEAR BRAKE & ANTI-SKID
ANTI-SKID TEST
INBD & NOSE
OUTBD & NOSE
OFF
ON
MAIN GEAR ANTI-SKID
OFF
ON
LEFT
OUTBD INBD
RIGHT
INBD OUTBD
HYDRAULIC SYSTEM A
ENG 1 PUMP
ENG 2 PUMP
LOW PRESS
ON
DEPR
OFF
OVERHEAT
HYD BRAKE INTERCONNECT
OPEN
CLOSE
ON
GRD INTERCONNECT
OPEN
CLOSE
PRESSURE
HYD QTY
SYS A
HYDRAULIC SYSTEM B
ELEC PUMP 1
ELEC PUMP 2
LOW PRESS
ON
OFF
OVERHEAT
HYDRAULIC STANDBY SYSTEM
OVERHEAT
ON
HYD QTY
STANDBY
LIMITED BRAKING WITH BOTH PUMPS OFF
PRESSURE
HYD QTY
SYS B

Figure 12

8405. What will cause the intermittent warning horn to sound on the ground as the throttles are advanced for takeoff?

1—Stab. trim not takeoff, flaps not down, or speed brakes not centered.
2—Flaps up, stab. trim not takeoff, or low engine power.
3—Speed brake not zero, flaps not takeoff, or stab. trim not in green band.
4—Autopack trip not armed, flaps not takeoff, or stab. trim not set for takeoff.

8406. How should the inboard flaps be operated if they stop before reaching the selected setting, but there is no indication of an asymmetrical condition?

1—That set of flaps may be positioned by the alternate flap switches.
2—That set of flaps must not be raised or lowered by any means.
3—Pull the flap position indicator circuit breaker and continue with normal flap extension.
4—Place the alternate flap master switch to the ON position and continue normal flap extension with the flap lever.

8407. What is indicated by illumination of the rudder load limiter light?

1—The rudder load limiter has been bypassed.
2—Hydraulic pressure to the upper rudder is too low.
3—Hydraulic pressure to the lower rudder is not appropriate for the flap setting.
4—Loss of hydraulic pressure to the rudder system which placed the system in manual reversion mode.

8408. Which is indicated when the rudder load limiter light illuminates on the flight engineer's panel with flaps down?

1—Lower rudder is operating mechanically from the rudder pedals.
2—Yaw dampers are inoperative.
3—Low hydraulic pressure to the lower rudder.
4—Excessive hydraulic power to the lower rudder.

8409. What precaution should be taken when landing in snow or slush?

1—Do not use reverse thrust below 80 knots IAS.
2—Turn engine fuel heat on prior to landing.
3—Leave flaps down until they can be checked.
4—Turn wing anti-ice on prior to landing.

8410. Which control devices are affected by position of the outboard flaps?

1—Outboard ailerons, outboard spoilers, and leading edge devices.
2—Outboard ailerons, inboard ailerons, and rudder load limiter.
3—Leading edge devices, outboard ailerons, and rudder load limiter.
4—Leading edge devices, inboard ailerons, and lower rudder.

8411. When throttles are advanced to the takeoff range, an intermittent horn signal indicates that possibly

1—the gear handle is not in the down position.
2—a door is not secured.
3—the horizontal stabilizer is in the green area.
4—the flaps are up.

8412. During takeoff, if flaps are not in takeoff position when throttles are advanced to takeoff range, the warning indication should be

1—a steady bell.
2—an intermittent horn.
3—a steady horn.
4—a red light in the flap handle.

8413. What is indicated when an amber leading edge flap light is illuminated?

1—One or more leading edge device(s) is(are) not in agreement with the LED switch position.
2—Leading edge devices are fully extended.
3—Leading edge devices are fully retracted.
4—A leading edge device is in transit or not in agreement with the flap lever.

8414. When will the electric trim operating light come on?

1—Anytime power is supplied to the main electric trim motor.
2—Anytime the stabilizer is being positioned.
3—Anytime power is supplied to either the main electric trim motor or the autopilot/Mach trim motor.
4—Anytime the stabilizer is being operated by the autopilot.

8415. What is accomplished by the rudder load limiter?

1—Reduces pressure to both rudders in high-speed flight.
2—Reduces pressure to both rudders in low-speed flight.
3—Reduces pressure to the lower rudder in low-speed flight.
4—Reduces pressure to the lower rudder in high-speed flight.

8416. What are functions of the elevator tabs?

1—Trim tabs; balance tabs in normal operation and in manual operation.
2—Trim tabs; control tabs in manual operation and normal operation.
3—Control tabs in manual operation and balance tabs in normal operation.
4—Balance tabs in manual operation and control tabs in normal operation.

8417. Which devices provide roll control in landing configuration?

1—Inboard ailerons, inboard spoilers, and ground spoilers.
2—Inboard and outboard ailerons; inboard and outboard spoilers.
3—Ailerons, spoilers, and speed brakes.
4—Outboard ailerons and all spoilers.

8418. Which flight controls can be operated by manual reversion?

1—Ailerons, elevators, rudder, and spoilers.
2—Upper rudder, lower rudder, and ailerons.
3—Elevators, inboard ailerons, and outboard ailerons.
4—Ailerons, spoilers, elevators, and trim tabs.

8419. What causes manual reversion of the flight controls?

1—Lowering the flaps to landing configuration.
2—Actuation of the ground sensing switch on the landing gear.
3—Selection of the standby hydraulic system.
4—Loss of hydraulic pressure in both system A and system B.

8420. What flight controls would be inoperative if system B hydraulic pressure were lost?

1—Outboard spoilers.
2—Inboard ailerons.
3—Inboard spoilers.
4—Outboard ailerons.

8421. What should you do if a generator breaker light comes on in flight?

1—Check essential; open all bus tie breakers.
2—Check fault annunciator; check battery switch ON.
3—Check essential and reduce loads.
4—Open the bus tie breaker, then reclose the generator breaker.

8422. When an abnormal indication appears on the flight engineer's electrical control panel, what is the first action that should be taken?

1—Check the KVAR loads.
2—Ensure that essential a.c. is available.
3—Trip the bus tie breaker of the faulty generator.
4—Reduce the electrical load.

8423. Which action should be accomplished first with the loss of all generators?

1—CSD switches, disconnect.
2—All field switches, trip.
3—Essential power selector, standby.
4—A.C. meters selector, bus tie.

8424. During the electrical fire procedure, the generator breaker switches and bus tie switches are tripped. What is a normal electrical power indication at this point in the procedure?

1—All KW/KVAR meters indicate zero power use.
2—One KW/KVAR meter indicates power use; two KW/KVAR meters indicate zero power use.
3—Each KW/KVAR meter indicates an equal share of the essential load.
4—Two KW/KVAR meters indicate a small power use; the defective generator KW/KVAR meter indicates zero power use.

8425. During the electrical fire procedure, which step should be taken before the generator breakers are tripped?

1—Fuel crossfeed selectors, OPEN.
2—Battery switch, OFF.
3—Cabin temperature control, MANUAL.
4—Hydraulic ground interconnect switch, OPEN.

8426. In cruising flight, during the electrical fire procedure, the flight engineer trips all three generator breakers. Which electrical power system(s) will remain in service in this event?

1—Battery power only.
2—Essential a.c., all flight instruments, and transformers/rectifiers.
3—Essential a.c., essential d.c., and battery power.
4—Battery power, emergency exit lights, and one VHF radio only.

8427. What action should be taken before resetting a tripped circuit breaker?

1—Position the associated control switch off.
2—Allow the breaker to cool for 30 seconds.
3—Trip the field switch of the affected generator.
4—Isolate all generators by tripping all bus tie breakers.

8428. What is the indication when a T/R is inoperative?

1—Amps negative; volts zero.
2—Amps zero; volts zero.
3—Amps zero; volts normal.
4—Amber warning light comes on.

8429. Because of a defective generator system, the generator field relay has been opened, the bus tie breaker has remained closed, and the generator drive has been disconnected. Which generator and CSD indications assure a positive disconnect of the drive?

1—CSD oil temperature decrease; CSD low oil pressure light on; residual volts 28 d.c.
2—Bus tie voltage zero; frequency off-scale low; CSD low oil pressure light on.
3—Residual volts zero; frequency 400 cps; CSD low oil pressure light out.
4—Residual volts zero; CSD low oil pressure light on.

8430. What action should be taken if a malfunctioning CSD will not disconnect?

1—Operate the engine at idle RPM.
2—Trip the associated field relay and generator breaker and continue engine operation.
3—Trip the associated bus tie breaker and continue engine operation.
4—Shut down the engine.

8431. What action is required if the CSD low oil pressure light and the generator breaker open light for one generator are on?

1—Attempt to close the generator breaker.
2—Open the bus tie breaker, close the generator breaker, and manually parallel.
3—Disconnect the CSD, check for zero frequency, and open the bus tie breaker.
4—Disconnect the CSD, confirm the disconnect, and open the generator field switch.

8432. The operation of which component is associated with the manual paralleling procedure?

1—Generator field relay.
2—Bus tie breaker.
3—Generator breaker.
4—Essential power selector.

8433. If it is necessary to manually parallel the generators, how should the second generator be added to the common bus?

1—Close the generator breaker when both sync lights are out.
2—Close the bus tie when both sync lights are out.
3—Close the bus tie when both sync lights are on.
4—Close the generator breaker when sync lights are flashing alternately.

8434. What steps should be taken to close a bus tie breaker that has tripped during paralleled operation when power is on both the sync bus and the load bus?

1—Trip the generator field relay prior to closing the bus tie breaker.
2—Check the generator frequency and, if it is within the auto-parallel range, close the bus tie breaker.
3—Trip the generator field relay, close the bus tie breaker, close the generator field relay, and then the generator breaker.
4—Adjust generator frequency for minimum sync flash rate, and close the bus tie breaker while both lights are out.

8435. What would be a probable cause of all bus tie breakers tripping open during flight?

1—Loss of essential 28V a.c. power.
2—A differential fault on the essential a.c. bus.
3—A phase unbalance fault on the sync bus.
4—Underspeed of all generators.

8436. Which type fault can cause simultaneous tripping of all bus tie breakers?

1—Pulling an engine fire switch.
2—Short or ground on the sync bus.
3—Short or ground on a load bus.
4—Loss of essential d.c. power.

8437. Which switch should be opened if one KW/KVAR meter indicates zero or negative during flight operations?

1—Generator field.
2—Bus tie breaker.
3—Generator breaker.
4—External power.

8438. What condition is indicated by a generator's field light being on?

1—The field relay is closed and the generator is delivering power to its load bus.
2—The generator's load bus is not receiving power.
3—The generator may be producing residual voltage only.
4—The generator may be producing power for the essential a.c. bus.

8439. Which indication shows that the generator is rotating when the field relay is tripped?

1—The field relay light remains out.
2—The a.c. voltmeter reads 115V.
3—The CSD oil low pressure light and the synchronizing lights are out.
4—The a.c. voltmeter reads 12V to 15V when the residual switch is depressed.

8440. What will trip a field relay?

1—CSD underspeed or overspeed.
2—Closing the APU generator breaker.
3—Short or ground on the sync bus.
4—Pulling the engine fire switch.

8441. Which type fault will trip a generator breaker?

1—Short or ground on the sync bus.
2—Loss of essential d.c. power.
3—CSD overspeed.
4—Illumination of CSD low oil pressure light.

8442. Which event will cause automatic tripping of the generator breaker?

1—Connecting the external power plug.
2—Tripping the field relay.
3—Opening the APU generator breaker.
4—Tripping the bus tie breaker.

8443. Which type fault can cause a single generator breaker light to be illuminated on the electrical panel?

1—Differential current fault.
2—Undervoltage.
3—CSD underspeed.
4—Over voltage.

8444. If a differential fault trips a generator field relay, which other equipment will be immediately affected?

1—The generator breaker and bus tie for the affected generator.
2—The generator breaker for the affected generator.
3—The other two generator field relays.
4—All three bus tie breakers.

8445. What electrical load should be reduced first for taxi to the ramp after landing?

1—Electric motor-driven hydraulic pumps.
2—Left pack switch.
3—All fuel booster pumps.
4—Galley power switch.

8446. Which electrical switch should be actuated to place a generator on the sync bus for automatic paralleling and for manual paralleling?

1—Bus tie for automatic; generator breaker for manual.
2—Generator breaker for automatic; bus tie for manual.
3—Bus tie for either automatic or manual.
4—Generator breaker for either automatic or manual.

8447. Which sources require No. 3 bus tie to be closed to supply the essential a.c. bus?

1—External power and No. 3 generator.
2—APU and No. 3 generator.
3—Generators Nos. 1, 2, and 3; APU and external power.
4—External power and APU.

8448. Just prior to starting the first engine, normal procedure is to place

1—both system B pump switches OFF.
2—all boost pump switches ON.
3—two engine bleed switches to CLOSE.
4—the galley power switch and both pack switches OFF.

8449. Which unit converts 115V a.c. to 28V a.c. for normal aircraft lighting?

1—Transformer/rectifier.
2—Step-down transformer.
3—Static inverter.
4—Reverse current contactor.

8450. Which condition is indicated if the synchronizing lights are flashing alternately?

1—Normal condition; the generators may be paralleled.
2—Low frequency; operate the generator isolated.
3—Either low or high frequency; the generator should not be used.
4—Phase reversal; the generator should not be used.

8451. What action is required to obtain residual voltage?

1—Trip the generator breaker and press the residual volts switch.
2—Position the a.c. meters selector, trip the field switch, and press the residual volts switch.
3—Position the essential power selector, and trip the generator field relay.
4—Press the residual volts switch and monitor the KW/KVAR meter.

8452. What should be done prior to checking residual volts of a generator?

1—Close the generator breaker.
2—Trip the bus tie breaker.
3—Trip the generator field relay.
4—Select the generator as the essential power source.

8453. Which condition is indicated when both a.c. generator synchronizing lights are on?

1—The selected generator is in phase with the synchronous bus.
2—The selected generator is out of phase with the synchronous bus.
3—The selected generator frequency is not the same as the synchronous bus.
4—The selected generator frequency is the same as the synchronous bus.

8454. Which is an indication of generator drive output speed?

1—Voltage.
2—Frequency.
3—Amperage.
4—N_2 RPM.

8455. Which components require use of the a.c. meters selector for valid operation?

1—Synchronizing lights, a.c. voltmeter, and essential power selector.
2—KW – KVAR meter, APU ammeter, and frequency meter.
3—Frequency meter, a.c. voltmeter, and synchronizing lights.
4—Frequency meter, a.c. voltmeter, and APU ammeter.

8456. With a generator's speed normal, what other condition(s) must be met for the generator to supply essential power when selected?

1—Both the generator field relay and the generator breaker closed.
2—Only the generator field relay closed.
3—Both the generator breaker and the bus tie breaker closed.
4—Only the generator breaker closed.

8457. What are the possible sources of essential a.c. power in flight?

1—Any generator with its field relay closed or essential T/R.
2—Any operating generator or the sync bus.
3—Any powered load bus.
4—Any operating generator.

8458. What is the function of the bus tie breaker?

1—To connect the generator to a common bus.
2—To control the RPM of the CSD output.
3—To disengage the generator from its drive mechanism in case of electrical emergencies.
4—To disconnect the generator from its bus when ground power is being utilized.

8459. What is a purpose of the generator field switch?

1—Deactivate the generator when tripped.
2—Connect the generator bus to the sync bus.
3—Connect the generator to its bus, if the generator is up to speed.
4—Supply the generator field with residual voltage.

8460. Under which condition does the frequency control have an effect on generator output?

1—When the synchronizing lights are out.
2—When the generator is isolated from the sync bus.
3—When adjusting frequency of the APU generator or external power generator.
4—When two or more generators are operating in parallel.

8461. What does the CSD temperature in the RISE position measure?

1—Outlet oil temperature.
2—Electrical power consumption.
3—CSD oil outlet minus inlet temperture.
4—Temperature rise of air passing through the oil cooler.

8462. Which controls on the flight engineer panel have an effect on the CSD?

1—Field switch, generator drive disconnect switch, and residual volts switch.
2—CSD disconnect, frequency control, and KVAR switch.
3—Field switch, KVAR switch, and frequency meter selector.
4—Frequency control and generator drive disconnect switch.

8463. The opening of which of these units would not remove a particular generator's power from its normal bus?

1—Field relay.
2—Bus tie breaker.
3—Generator breaker.
4—CSD disconnect switch.

8464. Making corrections for unbalanced KW loads of paralleled generators is a function of the

1—frequency control knob.
2—voltage regulation system.
3—constant-speed drive system.
4—synchronizing bus system.

8465. What should be done if a generator frequency reads high immediately after engine start?

1—Reduce electrical load or decrease N_2.
2—Shut down the engine and have oil added to the CSD tank.
3—Allow time for the CSD oil to warm up before taking any action.
4—Close the bus tie breaker and equalize the load.

8466. Which factors determine CSD oil temperature in cruising flight?

1—Generator load, airspeed, and ambient temperature.
2—Voltage, frequency, and engine oil temperature.
3—Electrical power consumption only.
4—Engine oil temperature and airspeed.

8467. What happens when the CSD switch is placed in the disconnect position?

1—The generator is disconnected from the CSD.
2—The generator drive shaft is sheared.
3—The CSD is disconnected from the engine.
4—The CSD shaft is sheared.

8468. What are functions of the generator constant-speed drive?

1—Maintain constant frequency and voltage.
2—Maintain constant frequency and balance loads of parallel generators.
3—Produce constant generator speed and voltage; provide for disconnect of the generator from the engine.
4—Balance loads of isolated generators and compensate for variations of engine RPM.

8469. What is the maximum continuous kilowatt load per generator?

1—30 KW.
2—36 KW.
3—40 KW.
4—46 KW.

8470. During an engine start, which is the first normal indication of generator rotation?

1—Frequency meter indication more than minimum scale.
2—Generator drive oil temperature gauge in yellow range.
3—CSD oil pressure light out.
4—KW or KVAR meter indication more than minimum scale.

8471. With one generator inoperative, what is the maximum allowable continuous electrical load on the other two generators?

1—36 KVA.
2—54 KW.
3—102 KW (108 KVA).
4—115V, 50 amps.

8472. What is the maximum allowable load difference between generators?

1—5V, 5 KW, or 5 KVAR.
2—7 KW or 3 KVAR.
3—10 KVA.
4—50 KW.

8473. What are the normal frequency and voltage limits of the engine-driven generator?

1—400 ± 5 cps; 120 ± 10V.
2—404 ± 10 cps; 115 to 120V.
3—400 ± 8 cps; 115 ± 5V.
4—380 to 420 cps; 105 to 120V.

8474. Which d.c. amperage may be indicated on the flight engineer's panel when selected by the d.c. meters rotary switch?

A. Battery input
B. Battery output
C. T/R input
D. T/R output
E. Static inverter output

1—A, B, C, D, and E.
2—B, C, and E only.
3—A, B, and D only.
4—A and D only.

8475. What is a function of the transformer rectifier?

1—To charge the battery.
2—To rectify 115V a.c. to 24V d.c.
3—To transform 28V d.c. to three-phase 115/120V a.c.
4—To convert 115V a.c. to 28V d.c.

8476. Which condition is indicated if, when the d.c. meter selector is set on ESS T/R, the voltage is normal but the amperage is zero?

1—The battery charger is inoperative.
2—Essential d.c. power is not available.
3—Essential T/R has failed.
4—All transformer-rectifiers are inoperative.

8477. During preflight inspection you would probably check the output of the external power cart. Output should be approximately

1—110 ±5V and 400 ±15 amps.
2—400 ±8 cps and 115 ±5V.
3—400 cps and 200V.
4—28 ±1V and 400 ±15 amps.

8478. Which light or meter reading is an indication that an external ground cart is supplying electrical power to the a.c. buses?

1—External power light illuminated.
2—Power indication on the No. 3 generator KW meter.
3—Amperage indication on the APU ammeter.
4—Bus tie breaker lights ON.

8479. What condition is indicated when the d.c. ammeter shows plus 25 amps with the selector in battery position?

1—The battery is being charged.
2—The battery is being discharged.
3—The essential a.c. bus is unpowered.
4—The battery switch is OFF.

8480. What would a momentary or intermittent, (blinking) CSD oil pressure light indicate?

1—The CSD fluid temperature is in the caution zone.
2—The respective generator is carrying a high voltage load.
3—Loss of fluid in the CSD unit.
4—High oil pressure in the CSD unit.

8481. During preflight with all a.c. power off, what is the minimum allowable battery voltage?

1—20V.
2—22V.
3—24V.
4—26V.

8482. How will a failed T/R unit be indicated?

1—Zero amps; negative volts.
2—Zero volts; normal current.
3—Zero volts; double normal amps.
4—Zero amps; normal bus volts.

8483. How is APU generator power applied to the sync bus when the APU is up to speed?

1—Close the APU generator field switch.
2—Close the bus tie switch.
3—Close the APU generator breaker switch.
4—Place the external power control switch ON.

8484. The yaw damper system minimizes dutch roll by displacing

1—the upper rudder and the lower rudder only.
2—the upper rudder only.
3—the lower rudder and the spoilers only.
4—both rudders, the spoilers, and the inboard ailerons.

8485. What action should be taken if the elevator low-pressure light illuminates during flight on autopilot?

1—Place the autopilot servo elevator switch in alternate position.
2—Maintain attitude by manual trim.
3—Disengage the autopilot.
4—Disengage the yaw damper.

8486. What action should be taken if the stabilizer out of trim light is illuminated during flight on autopilot?

1—Disengage the autopilot.
2—Trim manually to the position determined for takeoff CG.
3—Trim manually to center the elevator position indicators.
4—Disengage the yaw damper.

8487. What is the effect of placing the autopilot ground test switch (FE aux panel) to GRD TEST during flight?

1—Yaw damper will disengage.
2—Elevator position indicator will deflect.
3—Autopilot will disengage.
4—No effect on autopilot or yaw damper operation.

8488. What action is required after the right pack trips due to an ACM overheat?

1—Select a cooler cabin temperature and reset.
2—Select a cooler zone temperature and reset.
3—Select a warmer cabin temperature and reset.
4—Operate on the left pack only for the remainder of the flight.

8489. Which method should be used to maintain maximum pressurization during one pack operation?

1—Open ram air inlet doors.
2—Close ram air inlet doors.
3—Close cargo heat outflow valve.
4—Open cargo heat outflow valve.

8490. Which condition is necessary for operation of the autopack trip system?

1—Flaps down.
2—Gear up.
3—Flaps up.
4—Gear down.

8491. How should the pressurization controls be positioned to remove smoke during pressurized flight?

1—Cabin altitude to ambient and rate selector to minimum rate.
2—Cabin altitude selector to 10,000 ft. and rate selector to minimum rate.
3—Cabin altitude selector to 10,000 ft. and rate selector to maximum rate.
4—Cabin altitude selector to sea level and rate selector to maximum rate.

8492. What is the purpose of the standby position of the essential power source selector? (See Figure 13.)

1—To provide an automatic a.c. power source from another generator if the one in use fails.
2—To provide a standby source of power for the essential a.c. bus.
3—To provide a power source for the emergency exit lights system.
4—To provide power to essential flight instruments and radios from the battery.

8493. During cruising flight, all generator breaker open lights are on, all generator field off lights are on, and the essential power failure light is on. What action should be taken to restore minimum electrical power? (See Figure 13.)

1—Rotate the essential power selector to standby.
2—Close the bus tie breaker switches.
3—Start the APU and rotate the essential power selector to APU.
4—Close the generator breaker switches.

8494. On changing from external power to aircraft generators, when should the first generator breaker be closed? (See Figure 13.)

1—As soon as voltage and frequency of No. 3 generator have stabilized.
2—Only after all generators have been paralleled.
3—Only after essential power is selected to an operating generator.
4—As soon as one generator is operating parallel tc the external power generator.

8495. Which action may be required to power the essential a.c. bus when external power is on the sync bus? (See Figure 13.)

1—Select GEN 3 on the essential power selector and close No. 3 generator breaker.
2—Select EXT PWR on the essential power selector only.
3—Select EXT PWR on the essential power selector and close No. 3 bus tie breaker, if open.
4—Select APU on the essential power selector and close No. 2 bus tie breaker, if open.

8496. Which function can only be obtained with the battery switch on? (See Figure 13.)

1—Charging of the battery.
2—Cperation of d.c.-powered instruments.
3—APU operation.
4—Parallel operation of ground power unit and aircraft generators.

8497. Which condition results when the battery switch is off? (See Figure 13.)

1—The battery can receive no charge from the battery charger.
2—The battery powers the hot battery buses only.
3—Essential d.c. is lost.
4—All d.c. power, except essential d.c., is lost.

8498. Which is an indication of a properly charged battery when the APU is supplying power and the meters selector is on BATT? (See Figure 13.)

1—22V to 24V and a pulsating amperage.
2—24V and no current flow.
3—25V to 28V and a pulsating amperage.
4—26V to 30V and no current flow.

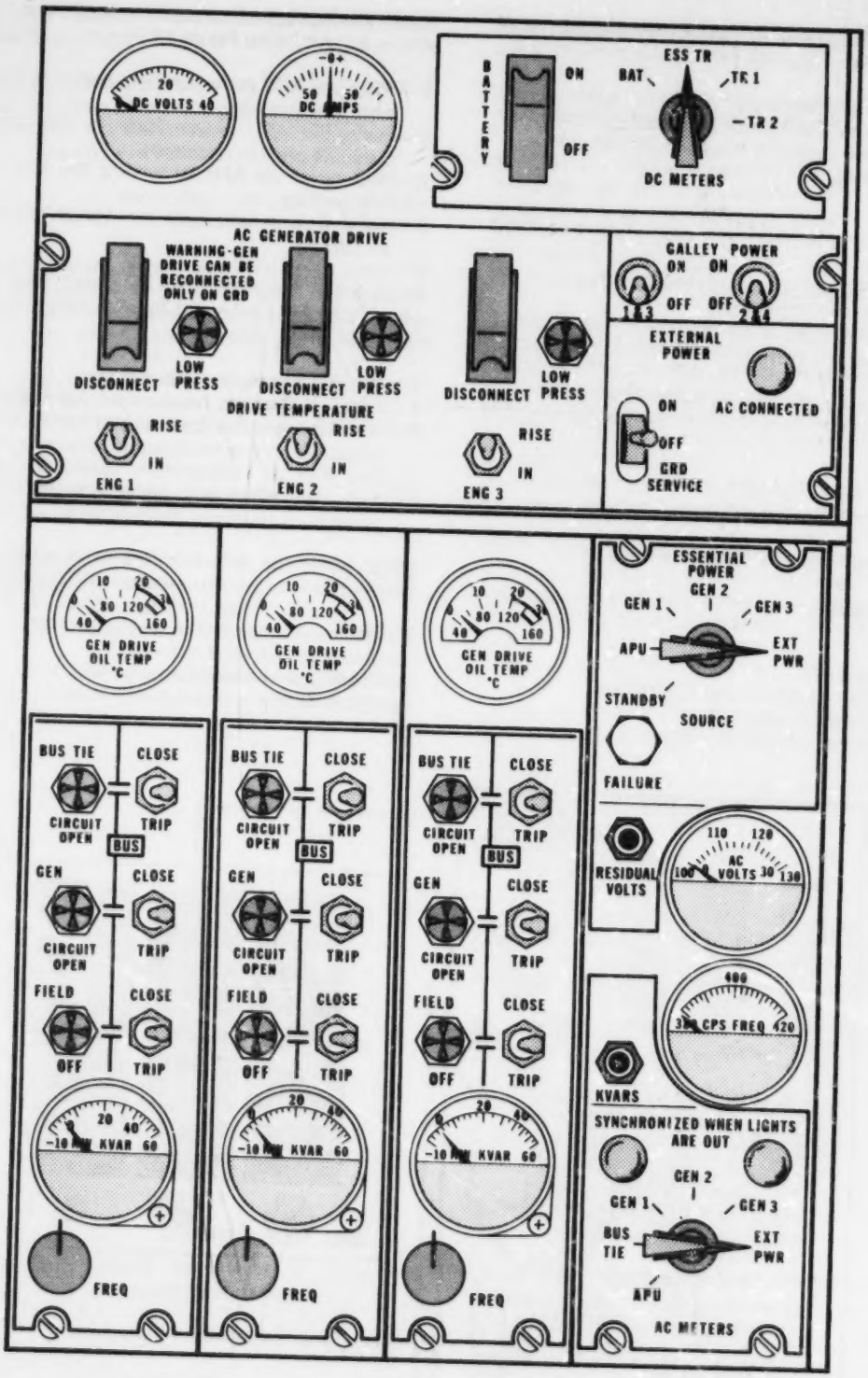
DC VOLTS
DC AMPS
BATTERY
ON
OFF
ESS TR
BAT
TR 1
TR 2
DC METERS
AC GENERATOR DRIVE
WARNING-GEN DRIVE CAN BE RECONNECTED ONLY ON GRD
DISCONNECT
LOW PRESS
DRIVE TEMPERATURE
RISE
IN
ENG 1
ENG 2
ENG 3
GALLEY POWER
ON
OFF
1 & 3
2 & 4
EXTERNAL POWER
AC CONNECTED
GRD SERVICE
GEN DRIVE OIL TEMP °C
BUS TIE
CLOSE
CIRCUIT OPEN
TRIP
BUS
GEN
FIELD
OFF
KVAR
FREQ
ESSENTIAL POWER
GEN 1
GEN 2
GEN 3
APU
EXT PWR
STANDBY SOURCE
FAILURE
RESIDUAL VOLTS
AC VOLTS
CPS FREQ
KVARS
SYNCHRONIZED WHEN LIGHTS ARE OUT
AC METERS

Figure 13

8499. Which event causes an automatic shutdown of an operating APU? (See Figure 14.)

1—Voltage or differential fault.
2—External power connected and operating.
3—APU EGT in the caution (yellow band) range.
4—APU fire warning.

8500. Which event occurs automatically as a result of an autofire shutdown of the APU? (See Figure 14.)

1—Freon is discharged to the APU compartment.
2—The APU fire horn is silenced.
3—The fuel shutoff valve is closed.
4—The bottle discharge switch is armed.

8501. When starting the APU, if light-off does not occur within the prescribed time limit, what should be done? (See Figure 14.)

1—Release the master switch.
2—Press the bottle discharge switch.
3—Pull the fire switch.
4—Continue cranking for 1 minute with fuel off.

8502. Which condition must be met to start the APU? (See Figure 14.)

1—Battery switch ON.
2—Automatic fire shutdown switch ARMED.
3—No. 2 fuel tank crossfeed ON.
4—Generator breaker switch CLOSED.

8503. During taxi-out, which procedure is correct for APU shutdown? (See Figure 14.)

1—Place the APU generator field switch in TRIP position prior to shutdown.
2—Place the APU power lever in idle position for 1 minute prior to shutdown.
3—Shut down the APU by turning the fuel valve to the OFF position.
4—Remove pnuematic loads for at least 1 minute prior to shutdown.

8504. When the APU is up to speed, what will be the result if the APU generator breaker switch is closed? (See Figure 14.)

1—All three bus tie breakers will trip.
2—Airplane generator breakers will automatically trip.
3—The APU bus tie breaker will close if the external power unit is not supplying electrical power.
4—The APU will automatically supply the sync bus with a.c. power which is in phase with the output of other generators supplying the sync bus.

8505. When the APU becomes overloaded, what occurs automatically to prevent excessive EGT? (See Figure 14.)

1—Electrical amperage output is reduced.
2—Bleed air output is reduced.
3—Generator breaker opens.
4—Bleed airflow is increased.

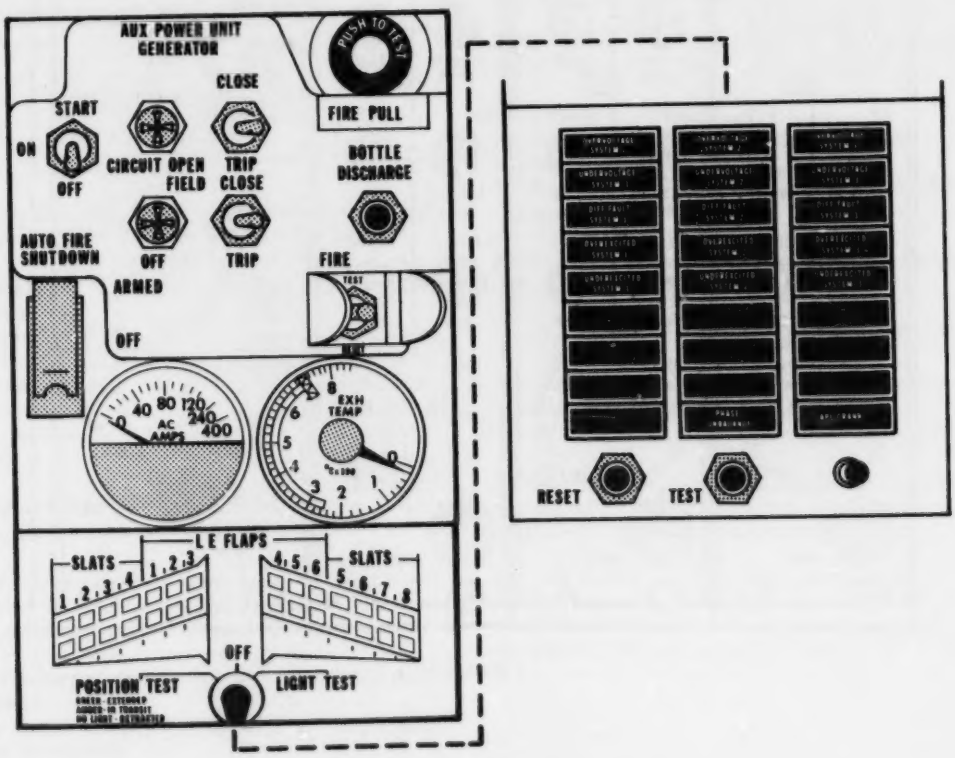

Figure 14

8506. How can the rate of smoke removal be increased during pressurized flight?

1—Increase the cabin altitude.
2—Increase the cabin differential pressure.
3—Close the cabin sidewall vents.
4—Open the wing anti-ice valves.

8507. Which is a description of a basic cabin pressurization system?

1—Relatively constant engine bleed air input, controlled outflow valve output, and no cabin leaks or bleeds.
2—Relatively constant engine bleed air input, controlled outflow valve output, and variable cabin leaks and bleeds.
3—Variable engine bleed air input, constant outflow valve output, and completely sealed cabin.
4—Variable engine bleed air input, constant outflow valve output, and controlled cabin bleeds.

8508. Which action should be taken if a rapid depressurization is indicated?

1—Pack switches – both off.
2—Oxygen diluter lever – normal.
3—Cabin outflow valve – manually open.
4—Engine bleeds – check two sources on.

8509. In the event of cabin decompression, the flight engineer should visually check to see that the passenger oxygen masks drupped when the cabin altitude reached approximately

1—8,000 ft.
2—10,000 ft.
3—12,000 ft.
4—14,000 ft.

8510. Which procedure should be accomplished in the event of rapid depressurization?

1—Cabin outflow valve MANUALLY OPEN.
2—Engine bleed air switches ALL CLOSED.
3—Pack switches CHECK BOTH ON.
4—Gasper fan OFF.

8511. What is the maximum altitude for dispatch with one air-conditioning pack inoperative?

1—10,000 ft.
2—15,000 ft.
3—20,000 ft.
4—25,000 ft.

8512. Which action should be taken if the NO EQUIPMENT COOLING light illuminates in flight?

1—Deactivate unnecessary communications and navigation equipment.
2—Turn on the equipment cooling fan.
3—Reduce airspeed, then lower flaps to cause activation of the pack cooling fans.
4—Select manual cool on the control cabin temperature.

8513. An intermittent warning horn while in cruise flight could be an indication that the

1—V_{MO}/M_{MO} speed has been reached.
2—aircraft altitude is 200 ft. above or below assigned cruise altitude.
3—cabin differential pressure limits have been exceeded.
4—cabin altitude has exceeded limits.

8514. If cabin pressure is increasing rapidly and cannot be controlled by either the automatic or standby pressurization controls, what procedure is recommended?

1—Position the cargo heat outflow switch to OPEN and turn the gasper fan OFF.
2—Stop the cabin pressure rise by positioning the ground venturi switch to ground.
3—Select MAN d.c. on the pressurization mode selector and place the outflow valve manual control switch to OPEN position.
4—Close the cargo heat outflow valve and open the ram air valve.

8515. During climb in automatic pressurization mode, the cabin altitude is not climbing as fast as desired. The flight engineer should select standby mode and make a correction by adjusting the cabin

1—rate selector to cause the outflow valves to close slower.
2—climb control to cause the relief valves to open faster.
3—differential control to cause the pneumatic duct pressure to increase.
4—altitude selector to cause the outflow valve to go FULL OPEN.

8516. What action is required after the cabin duct overheat light illuminates?

1—Open the cooling doors for both packs.
2—Select a cooler cabin temperature and reset.
3—Select a warmer cabin temperature and reset.
4—Close both pack valves until the light goes out.

8517. Which of the following is a normal source of heat for the air-conditioning system?

1—Engine turbine section heat exchanger.
2—Electric radiant ceiling panels.
3—Engine bleed air.
4—Jet heat pump.

8518. What method is normally used to prevent pressurization pressure bumps during takeoff?

1—Set cabin rate control to FULL DECREASE.
2—Prepressurize the aircraft approximately one-eighth PSI.
3—Set cabin altitude selector 2,000 ft. above planned flight altitude.
4—Set 29.92 in the barometric scale and the cabin altitude pointer to 8.6 PSI differential.

8519. Which type component is operated when the pressurization manual control is used? (See Figure 15.)

1—Bleed air valve.
2—Air-conditioning pack valve.
3—Cabin pressure relief valve.
4—Outflow valve.

8520. Which fault will cause the left pack to trip off? (See Figure 15.)

1—Overspeed of the ADM turbine.
2—ACM compressor discharge overheat.
3—Excess airflow to the ACM.
4—Nos. 1 and 2 engine bleed switches closed.

8521. What happens when the pack trip light illuminates? (See Figure 15.)

1—Pack valve closes and air mix valve drives full cold.
2—Air mix valve runs full cold and cooling doors drive full open.
3—Autopack trip system actuates.
4—Pack valve closes and pack cooling doors open.

8522. Which is an indication that the autopack trip system has operated during initial climb? (See Figure 15.)

1—Both pack trip lights ON and the engine fail lights ON.
2—One pack trip light ON and autopack trip armed light OUT.
3—Both pack trip lights ON and a reduction on the duct pressure indicator.
4—Autopack trip armed light OUT and a reduction of EPR on at least one engine.

8523. What is the normal procedure for pack operation during landing? (See Figure 15.)

1—One pack on No. 2 engine, with No. 2 engine left bleed isolation valve closed.
2—Packs on Nos. 1 and 3 engines, with No. 2 engine bleed isolation valves open.
3—Packs on Nos. 1 and 3 engines, with No. 2 engine bleed isolation valves closed.
4—Packs on No. 2 engine, with No. 2 engine bleed isolation valves open.

8524. What should be done in case an autopack trip occurs? (See Figure 15.)

1—Pack switches OFF; reset switch PUSH.
2—Autopack trip switch CUTOUT; engine bleed switches CLOSED.
3—Engine bleed switches CLOSED; cargo heat outflow CLOSED.
4—Pack switches ON; reset switch PUSH.

8525. Which action occurs automatically in the event of a conditioned air overheat as indicated by illumination of a duct overheat light? (See Figure 15.)

1—Engine bleed valves are closed.
2—Pack cooling fans are turned on.
3—Air mix valves are driven full cold.
4—Cooling turbine speed is increased.

8526. What occurs automatically when the aft cabin temperature overheat light illuminates? (See Figure 15.)

1—Zone valve position indicator moves to mid-position.
2—Air mix valve is driven full cold.
3—Pack valves are closed.
4—Bleed air supply is reduced.

8527. Which component should be monitored when using the manual mode of the cabin temperature control? (See Figure 15.)

1—Cooling doors indicator.
2—Air mix valve indicator.
3—Outflow valve position.
4—Pack temperature indicator.

8528. How should the pack cooling doors be positioned for takeoff or landing in snow or slush? (See Figure 15.)

1—Close doors before takeoff and before landing.
2—Open doors before takeoff and before landing.
3—Close doors after takeoff and open doors before landing.
4—Cycle doors open and closed at least two times after takeoff and after landing.

8529. When is the autopack trip switch normally placed to cutout? (See Figure 15.)

1—During landing gear retraction.
2—After the flaps are retracted or a specified altitude above the terrain.
3—After a positive rate of climb is established and the arming light is on.
4—After the aircraft reaches cruise altitude and has accelerated to cruise speed.

8530. What is the purpose of the autopack system? (See Figure 15.)

1—To trip off any pack that overspeeds.
2—To trip off any pack whose discharge temperature exceeds a set value.
3—To trip off either pack if the respective pod engine loses thrust during takeoff.
4—To trip off both packs if any engine loses thrust during takeoff.

8531. What is an advantage of the autopack trip system? (See Figure 15.)

1—Causes an immediate reduction of bleed air use in event of thrust reduction during takeoff and climb.
2—Protects air-conditioning system against over-temperatures.
3—Protects ACM's against overspeed.
4—Prevents cabin pressurization bumps and rapid pressure changes during takeoff and initial climb.

8532. What is a function of the cargo heat outflow valve? (See Figure 15.)

1—When open, it controls the flow of pressurized air around the forward cargo compartment.
2—When closed, it changes the cargo compartment from a Class C to a Class D type.
3—When closed, it traps hot air in the compartment to permit live animal transportation.
4—When open, it directs hot air into the cargo compartment for normal operation.

8533. Which adjustment should be made if the aft cabin is too cold while the forward cabin is normal temperature? (See Figure 15.)

1—Select OVERHEAD on the passenger cabin air distribution selector.
2—Select COOLER on the zone temperature control.
3—Select SIDEWALL on the passenger cabin air distribution selector.
4—Select WARMER on the zone temperature control.

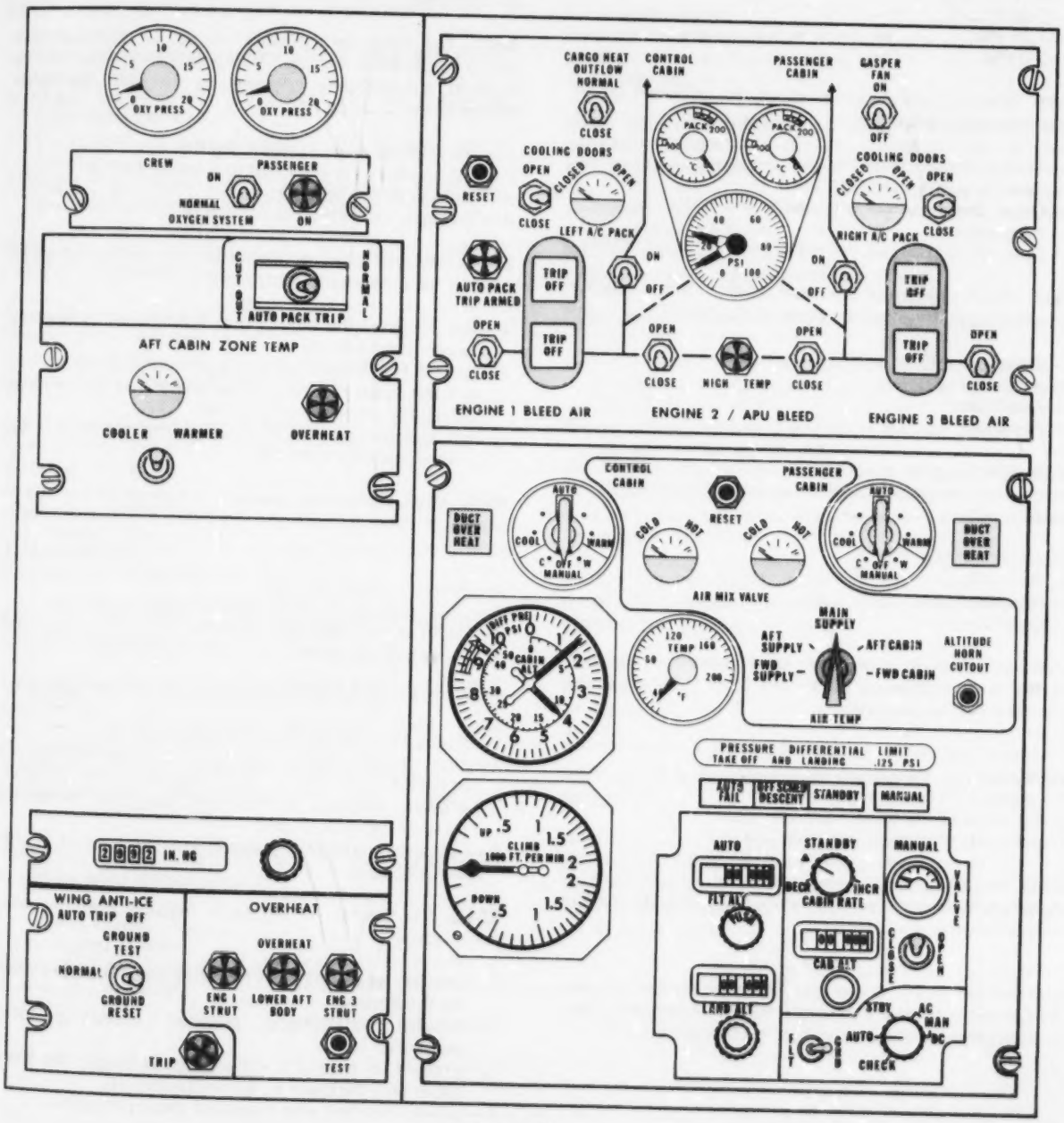

Figure 15

8534. What correction is made when the aft cabin zone temperature control is moved to a cooler position? (See Figure 15.)

1—Additional cold air is directed to the aft cabin.
2—Additional warm air is supplied to the forward cabin.
3—Bleed air supply is reduced.
4—Air cycle machine output is increased.

8535. What is the maximum cabin differential pressure during takeoffs and landings?

1—0.125 PSI.
2—0.36 PSI.
3—1.25 PSI.
4—2.0 PSI.

8536. Which action(s) would relieve the workload on an ACM following a pack trip?

1—Select a cooler temperature.
2—Select a warmer temperature.
3—Close the pack cooling doors and select a cooler temperature.
4—Open No. 2 bleed air valve and push the reset button.

8537. Which position of the cabin air distribution selector should be used for a rapid cooling of the cabin?

1—Sidewall.
2—Automatic.
3—Overhead.
4—Manual.

8538. Which position of the passenger cabin air distribution selector provides the fastest heating of the cabin?

1—Flow multiplier ON.
2—Sidewall.
3—Gasper fan ON.
4—Overhead.

8539. Which event is one indication of normal operation as the air-conditioning packs are turned on while the aircraft is on the ground?

1—Immediate flow of cold air from the air-conditioning ducts.
2—Increase of fuel flow at constant N_2.
3—Increase of electrical a.c. power draw.
4—Increase of duct air pressure.

8540. Which is the correct sequence of components encountered by the cabin air as it flows through an air-conditioning pack and ACM?

1—Turbine, compressor, heat exchanger.
2—Heat exchanger, compressor, heat exchanger, turbine.
3—Compressor, heat exchanger, turbine, heat exchanger.
4—Compressor, evaporator, heat exchanger, turbine.

8541. What is the function of a pack valve?

1—Mix hot air, cold air, and cool air
2—Control operation of the pack cooling fan.
3—Control output of the air cycle machine.
4—Admit bleed air to the air-conditioning system.

8542. When a pack switch is turned off, what position should the air mix valve assume?

1—Remain in last selected position.
2—Full hot.
3—Position to maintain 70 percent cabin temperature.
4—Full cold.

8543. The cabin temperature control is changed to a warmer automatic setting. The operation of which device is then automatically changed to increase the cabin temperature?

1—The outflow valve is closed slightly.
2—The air mix valve is moved to a hotter setting.
3—The gasper fan is turned on.
4—The pack valves are closed slightly.

8544. How can positive control of the outflow valves be maintained (pneumatic controller)?

1—Set 29.92 on the barometric control prior to reaching cruise flight altitude.
2—Set 8.6 PSI differential in the cabin altitude selector.
3—Set the cabin rate of change selector to full increase after climb power is established.
4—Set approximately 2,000 ft. above flight altitude in the pressurization controller.

8545. What component gives an indication of the rate of change in cabin altitude and what unit of measurement is used?

1—Pressure controller/PSI.
2—Cabin vertical-velocity indicator/feet per minute.
3—Cabin vertical-velocity indicator/PSI.
4—Cabin altitude indicator/inches of mercury.

8546. The function of the cabin pressure relief valve is to

1—prevent exceeding 8,000 ft. cabin altitude.
2—limit cabin differential pressure to a maximum of 9.6 PSI in flight.
3—prevent external atmospheric pressure exceeding internal cabin pressure.
4—limit cabin differential pressure to a maximum of 1.5 PSI on the ground.

8547. The function of the cabin negative pressure relief valve is to

1—prevent exceeding .125 PSI differential pressure when on the ground.
2—prevent atmospheric pressure exceeding cabin pressure.
3—prevent a pressure differential between the main cabin and the lower cargo compartments.
4—prevent landing with a positive cabin pressure.

8548. Which precaution should be observed when performing the preliminary cockpit preflight?

1—Do not perform the pitot static heat system check while the aircraft is stationary.
2—Obtain ground clearance before applying electrical power to the aircraft.
3—Obtain ground clearance before actuating a hydraulic pump.
4—Do not perform the engine fire warning system check while using APU power.

8549. Which is appropriate if several vortex generators are observed to be missing from the airplane?

1—Have maintenance replace all missing generators prior to flight.
2—Check the Minimum Equipment List for applicable flight restrictions.
3—50 percent of the generators are allowed to be missing.
4—Flight is permitted if an equal number of generators are missing on each side of the airplane.

8550. Just prior to starting the first engine, normal procedure is to place

1—all boost pump switches ON.
2—both packs and galley power OFF.
3—both system B pump switches OFF.
4—two engine bleed switches to CLOSE.

8551. When throttles are advanced for takeoff, if the speed brakes are not in takeoff position, the warning indication should be

1—an intermittent horn.
2—a steady horn.
3—a steady bell.
4—a red light in the flap handle.

8552. How should the landing gear doors be opened for preflight inspection?

1—Place the gear door ground release handles in OPEN position.
2—Turn manual extension handcrank three turns clockwise.
3—Place landing gear lever off to free-fall doors.
4—Mechanically disconnect the door operation mechanism.

8553. The green AIRSTAIR light in the cockpit will illuminate when the airstair is

1—up and locked.
2—down and locked.
3—supplied with hydraulic pressure.
4—not up and locked.

8554. Which condition for the aft stair is indicated when the amber AIRSTAIR light on the flight engineer lower panel is illuminated.

1—Down and locked.
2—Not up and locked.
3—Up and locked.
4—Supplied with hydraulic pressure.

8555. Which aircraft area contains a fire-detection system and is also protected by a fixed fire-extinguishing system?

1—Engine nacelle.
2—Lower electrical compartment.
3—Engine hot section and wheel well.
4—Wheel well.

8556. Which aircraft area contains a fire or overheat detection system but is not protected by a fire-extinguishing system?

1—Wheel well.
2—Engine strut.
3—APU compartment.
4—Lower cargo compartment.

8557. What is a feature of the passenger oxygen system?

1—The masks drop and oxygen automatically flows through the masks anytime cabin altitude exceeds 10,000 ft.
2—The green overboard discharge disc will be missing if the system has been used.
3—The system must be shut off and reset manually, regardless of the method of actuation.
4—The system cannot be actuated unless aircraft altitude exceeds 14,000 ft.

8558. During preflight, what should be the position of the passenger oxygen actuation-reset handle? (Flight engineer aux panel.)

1—On.
2—Reset.
3—Open.
4—Off.

8559. What is indicated when the oxygen system amber light is on?

1—The crew system has been depleted.
2—The passenger oxygen masks are being used.
3—The passenger system has been pressurized.
4—The interconnect valve between crew and passenger systems is open.

8560. What is the approximate duration of the passenger oxygen system under these conditions? (See Figure 16.)

Cabin altitude ..... 15,000 ft.
Passengers 120
Bottle pressure ..... 1,500 PSIG

1—23 minutes.
2—25 minutes.
3—26 minutes.
4—28 minutes.

8561. What is the approximate duration of the passenger oxygen system under these conditions? (See Figure 16.)

Cabin altitude ..... 20,000 ft.
Passengers 75
Bottle pressure ..... 1,200 PSIG

1—15 minutes.
2—17 minutes.
3—19 minutes.
4—23 minutes.

8562. What is the approximate duration of the passenger oxygen system under these conditions? (See Figure 16.)

Cabin altitude ..... 25,000 ft.
Passengers 90
Bottle pressure ..... 1,500 PSIG

1—11 minutes.
2—13 minutes.
3—14 minutes.
4—16 minutes.

The table below gives the approximate duration of the cabin oxygen system, based on a cylinder pressure of 1500 psi.

CABIN ALTITUDE	NUMBER OF PASSENGERS	*APPROX. DURATION
15,000	50	62 mins.
	75	40 mins.
	100	28 mins.
	135	23 mins.
20,000	50	41 mins.
	75	26 mins.
	100	19 mins.
	135	16 mins.
25,000	50	27 mins.
	75	17 mins.
	100	12 mins.
	135	10 mins.

For cylinder pressures less than 1500 psi, reduce duration by 8% for each 100 psi.

Figure 16

8563. What is the intended use of the high rate outlet on the passenger cabin portable oxygen cylinder?

1—For use during a smoke evacuation procedure.
2—For cabin attendant use during cabin depressurization.
3—For use when entering an unpressurized compartment of the aircraft.
4—For first aid oxygen.

8564. Which is a feature of the passenger oxygen deployment system?

1—The oxygen masks will automatically drop at 10,000 ft. cabin altitude.
2—When masks are deployed automatically, an intermittent horn is energized in the cockpit.
3—The masks supply oxygen only when the user inhales.
4—The automatic system is bypassed by actuating a switch on the flight deck.

8565. The oxygen supply valve at a passenger unit

1—will open at 14,000 ft. cabin altitude.
2—is opened when the mask is pulled to the passenger's face.
3—is opened by actuating a switch on the pilot's overhead panel.
4—must be opened and closed by a flight attendant.

8566. A ruptured or missing green disc associated with the oxygen system indicates that the

1—crew oxygen cylinder has been completely discharged of pressure.
2—oxygen cylinder pressure limit has been exceeded in both passenger bottles.
3—oxygen cylinder pressure limit has been exceeded in one crew or passenger bottle.
4—associated crew or passenger cylinder temperature limit has been exceeded.

8567. With the supply lever on, what condition of oxygen flow should be available when the selector on the regulator is placed in EMERGENCY.

1—100 percent on demand.
2—Continuous undiluted oxygen flow.
3—Continuous diluted oxygen flow.
4—Diluted oxygen to a cabin altitude of 12,000 ft. then 100 percent oxygen.

8568. During the preflight check of the oxygen mask and regulator, what is an indication of proper operation with the regulator in 100 percent and the supply lever off?

1—No air or oxygen available.
2—Oxygen flow should be indicated while inhaling.
3—Ambient air is admitted through the regulator.
4—No oxygen flow, but filtered cockpit air is admitted through the regulator.

8569. When performing the cockpit preflight oxygen check, what condition should exist with the regulator in normal and the supply lever on?

1—Oxygen flow should be indicated only while inhaling.
2—Ambient air should be available when inhaling, but no oxygen flow should be indicated.
3—Ambient air only should be available if the altitude is below 5,000 ft.
4—Oxygen flow should be continuous until the regulator is placed in OFF position.

8570. Which type oxygen flow can be obtained from the flightcrew portable oxygen cylinder?

1—High rate or low rate continuous flow.
2—100 percent or diluter demand.
3—Diluter demand only.
4—100 percent demand with a full–face smoke mask.

8571. Which selection of an oxygen control lever is used to prevent entrance of flight deck air into the crew oxygen regulator?

1—Supply lever, on.
2—Emergency lever, normal.
3—Supply lever, off.
4—Diluter lever, 100 percent.

8572. Which action should be taken during the passenger evacuation procedure to facilitate opening of the escape hatches or doors?

1—Cabin altitude selector – field elevation plus 1,000 ft.
2—Outflow valve control switch – OPEN.
3—Cabin altitude selector – field elevation less 200 ft.
4—Outflow valve control switch – CLOSE.

8573. Determine the takeoff stabilizer trim setting within the nearest 1/4 unit. (See Figure 17.)

Takeoff weight.....150,000 lb.
Takeoff total moment index.....13472.2
Reduction factor.....10,000
MAC.....180.7
LEMAC.....Sta. 860.2
Flaps.....5°

1—5–1/2 units noseup.
2—5–3/4 units noseup.
3—6 units noseup.
4—6–1/4 units noseup.

8574. Determine the takeoff stabilizer trim setting within the nearest 1/4 unit. (See Figure 17.)

Takeoff weight.....165,000 lb.
Takeoff total moment index.....15063.9
Reduction factor.....10,000
MAC.....180.7
LEMAC.....Sta. 860.2
Flaps.....15°

1—3–3/4 units noseup.
2—4 units noseup.
3—4–1/4 units noseup.
4—4–1/2 units noseup.

8575. Determine the takeoff stabilizer trim setting within the nearest 1/4 unit. (See Figure 17.)

Takeoff weight.....160,000 lb.
Takeoff total moment index.....14523.6
Reduction factor.....10,000
MAC.....180.7
LEMAC.....Sta. 860.2
Flaps.....15°

1—4–1/2 units noseup.
2—4–3/4 units noseup.
3—5 units noseup.
4—5–1/4 units noseup.

8576. With the supply lever on, what condition of oxygen flow should exist when the selector on the regulator is placed in emergency?

1—Continuous flow of diluted oxygen under positive pressure.
2—Continuous flow of 100 percent oxygen under positive pressure.
3—100 percent oxygen available on demand.
4—Diluted oxygen available on demand.

8577. What does the crew oxygen pressure gauge indicate?

1—Bottle pressure regardless of valve position.
2—Oxygen pressure between the individual regulator and the full–face mask.
3—Oxygen pressure in the line between the oxygen bottle and the regulator.
4—Bottle pressure only if the valve is closed.

STAB. TRIM SETTING – UNITS AIRPLANE NOSE UP

FLAPS	CG	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42
	5°	8-1/4	8	7-1/2	7	6-1/2	6	5-1/2	5	4-1/2	4-1/4	3-3/4	3-1/4	2-3/4	2-1/4	2	1-1/2	1
	15°	9	8-1/2	8	7-1/2	7	6-1/2	6	5-1/2	5	4-1/2	4	3-1/2	3	2-1/2	2	1-1/2	1
	25°	9-1/2	9	8-1/2	8	7-1/2	7	6-1/2	5-3/4	5-1/4	4-3/4	4-1/2	3-3/4	3	2-1/2	2	1-1/2	1

Figure 17

8578. What is the maximum payload under these conditions?

Basic operating weight.....101,500 lb.
Max. zero fuel weight.....138,000 lb.
Max. landing weight.....142,500 lb.
Max. takeoff weight.....184,200 lb.
Fuel tank load.....52,000 lb.
Est. fuel burn en route.....45,500 lb.

1—27,700 lb.
2—30,700 lb.
3—34,200 lb.
4—36,500 lb.

8579. What is the maximum payload under these conditions?

Basic operating weight.....102,000 lb.
Max. zero fuel weight.....138,000 lb.
Max. landing weight.....142,500 lb.
Max. takeoff weight.....184,200 lb.
Fuel tank load.....54,500 lb.
Est. fuel burn en route.....47,500 lb.

1—27,700 lb.
2—29,300 lb.
3—34,700 lb.
4—36,000 lb.

8580. An airplane weighing 168,000 lb. when loaded for takeoff was found to have the CG 1" aft of the CG limits. How many boxes, each weighing 160 lb., must be moved from station 1110.0 to station 630.0 to bring the CG within limits?

1—1 box.
2—2 boxes.
3—3 boxes.
4—4 boxes.

8581. The gross weight of the aircraft is 155,000 lb. How much weight must be moved from station 1028.0 to station 582.0 to move the CG forward 1.2"?

1—352 lb.
2—418 lb.
3—516 lb.
4—585 lb.

8582. A cargo aircraft loaded to maximum takeoff gross weight of 165,000 lb. is tail heavy. How many 50-pound boxes must be moved from station 1200.0 to station 710.0 to move the CG forward 3.2"?

1—21 boxes.
2—22 boxes.
3—23 boxes.
4—24 boxes.

8583. A cargo aircraft loaded to maximum takeoff gross weight of 150,000 lb. is tail heavy. How many 150-pound boxes must be moved from the 1200-inch station to the 700-inch station to move the CG forward 3"?

1—3 boxes.
2—6 boxes.
3—9 boxes.
4—12 boxes.

8584. Using the data given, determine the minimum weight of cargo which must be shifted from the aft to the forward compartment to bring the CG within limits.

Total weight.....165,000 lb.
MAC.....Sta. 860.2 – 1040.9
CG.....34.0% MAC
Aft CG limit.....32.0% MAC
Cargo centroids –
Fwd.....582"
Aft.....1028"

1—740 lb.
2—1,032 lb.
3—1,338 lb.
4—1,410 lb.

8585. Using the data given, determine the minimum weight of cargo which must be shifted from the aft to the forward compartment to bring the CG within limits.

Total weight.....150,000 lb.
MAC.....Sta. 860.2 – 1040.9
CG.....33.5% MAC
Aft CG limit.....32.0% MAC
Cargo centroids –
Fwd.....582"
Aft.....1028"

1—518 lb.
2—875 lb.
3—912 lb.
4—1,050 lb.

8586. An aircraft is ready for takeoff with these loading conditions:

Takeoff weight.....155,000 lb.
CG.....30.7% MAC
MAC.....860.2" – 1040.9"
Compartment locations –
Fwd.....582"
Aft.....1028"

Before takeoff, 4,500 lb. of cargo is shifted from the aft to the forward compartment. What is the new CG location?

1—22.5 percent of MAC.
2—23.5 percent of MAC.
3—26.7 percent of MAC.
4—28.4 percent of MAC.

8587. Before a cargo change is made, the following is known about an airplane:

Aircraft weight.....175,000 lb.
CG position.....29.5% MAC
Length of MAC.....Sta. 860.2 to 1040.9

If 6,500 lb. of cargo is removed from an average location of station 1170.0, what is the new CG position relative to MAC?

1—24.0 percent.
2—26.8 percent.
3—27.6 percent.
4—34.9 percent.

8588. Before a cargo change is made, the following is known about an airplane:

Aircraft weight.....165,000 lb.
CG position.....30.5% MAC
Length of MAC.....Sta. 860.2 to 1040.9

If 5,000 lb. of cargo is added to an average location of station 680.0, what is the new CG position relative to MAC?

1—24.3 percent.
2—26.7 percent.
3—28.4 percent.
4—34.3 percent.

8589. Before a cargo change is made, the following is known about an airplane:

Aircraft weight.....155,000 lb.
CG position.....24.5% MAC
Length of MAC.....Sta. 860.2 to 1040.9

If 7,000 lb. of cargo is added to an average location of station 1170.0, what is the new CG position relative to MAC?

1—25.4 percent.
2—26.7 percent.
3—30.8 percent.
4—31.6 percent.

8590. What is the maximum payload under these conditions?

Basic operating weight.....100,500 lb.
Max. zero fuel weight.....138,000 lb.
Max. landing weight.....142,000 lb.
Max. takeoff weight.....184,200 lb.
Fuel tank load.....54,000 lb.
Est. fuel burn en route.....40,000 lb.

1—27,500 lb.
2—30,500 lb.
3—33,000 lb.
4—37,500 lb.

8591. An aircraft is ready for takeoff with these loading conditions:

Takeoff weight.....165,000 lb.
CG.....20.7% MAC
MAC.....860.2" – 1040.9"
Compartment locations –
Fwd.....582"
Aft.....1028"

Before takeoff, 2,250 lb. of cargo is shifted from the forward to the aft compartment. What is the new CG location?

1—22.5 percent of MAC.
2—24.1 percent of MAC.
3—24.7 percent of MAC.
4—25.3 percent of MAC.

8592. Determine the CG in percent of MAC. (See Figure 18, page 61.)

Basic Operating Weight.....105,000 lb.
Basic Operating Index (Moment/1,000).....92,827.0
MAC – 860.2 – 1040.9
Passenger Load:
Fwd compt.....22
Aft compt.....95
Cargo Load:
Fwd hold.....1,950 lb.
Aft hold.....900 lb.
Fuel Load:
Tanks 1 and 3 (each).....11,500 lb.
Tank 2.....Full

1—26.2 percent MAC.
2—26.8 percent MAC.
3—27.1 percent MAC.
4—27.9 percent MAC.

8593. Determine the CG in percent of MAC. (See Figure 18, page 61.)

Basic Operating Weight.....105,000 lb.
Basic Operating Index (Moment/1,000).....92,827.0
MAC – 860.2 – 1040.9
Passenger Load:
Fwd compt.....17
Aft compt.....75
Fuel Load:
Tanks 1 and 3 (each).....11,000 lb.
Tank 2.....18,500 lb.
Cargo Load:
Fwd hold.....1,800 lb.
Aft hold.....800 lb.

1—25.3 percent MAC.
2—26.2 percent MAC.
3—27.1 percent MAC.
4—27.9 percent MAC.

8594. What is the CG in percent of MAC? (See Figure 18.)

Basic Operating Weight.....105,000 lb.
Basic Operating Index.....92,827.0
(Moment/1,000)
MAC – 860.2 – 1040.9
Passenger Load:
Fwd compt.....Full
Aft compt.....105
Fuel Load:
Tanks 1 and 3 (each).....Full
Tank 2.....24,000 lb.
Cargo Load:
Fwd hold.....3,500 lb.
Aft hold.....1,200 lb.

1—25.0 percent MAC.
2—26.0 percent MAC.
3—27.0 percent MAC.
4—28.0 percent MAC.

8595. Determine the CG in inches aft of LEMAC. (See Figure 18.)

Basic Operating Weight.....105,000 lb.
Basic Operating Index.....92,827.0
(Moment/1,000)
MAC – 860.2 – 1040.9
Passenger Load:
Fwd compt.....Full
Aft compt.....83
Fuel Load:
Tanks 1 and 3 (each).....12,000 lb.
Tank 2.....Full
Cargo Load:
Fwd hold.....3,500 lb.
Aft hold.....2,000 lb.

1—43.8 inches.
2—45.7 inches.
3—46.3 inches.
4—47.4 inches.

8596. Determine the CG in inches aft of LEMAC. (See Figure 18.)

Basic Operating Weight.....105,000 lb.
Basic Operating Index.....92,827.0
(Moment/1,000)
MAC – 860.2 – 1040.9
Passenger Load:
Fwd compt.....25
Aft compt.....105
Fuel Load:
Tanks 1 and 3 (each).....12,000 lb.
Tank 2.....19,000 lb.
Cargo Load:
Fwd hold.....2,500 lb.
Aft hold.....1,750 lb.

1—47.4 inches.
2—48.5 inches.
3—50.1 inches.
4—52.3 inches.

8597. Determine the CG in inches aft of datum. (See Figure 18.)

Basic Operating Weight.....105,000 lb.
Basic Operating Index.....92,827.0
(Moment/1,000)
MAC – 860.2 – 1040.9
Passenger Load:
Fwd compt.....27
Aft compt.....105
Cargo Load:
Fwd hold.....1,800 lb.
Aft hold.....800 lb.
Fuel Load:
Tanks 1 and 3 (each).....11,000 lb.
Tank 2.....Full

1—907.6 inches.
2—908.2 inches.
3—910.8 inches.
4—911.4 inches.

8598. What is the CG in inches aft of datum? (See Figure 18.)

Basic Operating Weight.....105,000 lb.
Basic Operating Index.....92,827.0
(Moment/1,000)
MAC – 860.2 – 1040.9
Passenger Load:
Fwd compt.....12
Aft compt.....62
Cargo Load:
Fwd hold.....1,150 lb.
Aft hold.....1,200 lb.
Fuel Load:
Tanks 1 and 3 (each).....9,500 lb.
Tank 2.....9,500 lb.

1—905.3 inches.
2—906.5 inches.
3—907.0 inches.
4—910.4 inches.

8599. What is the CG in inches aft of datum? (See Figure 18.)

Basic Operating Weight.....105,000 lb.
Basic Operating Index.....92,827.0
(Moment/1,000)
MAC – 860.2 – 1040.9
Passenger Load:
Fwd compt.....19
Aft compt.....66
Cargo Load:
Fwd hold.....950 lb.
Aft hold.....775 lb.
Fuel Load:
Tanks 1 and 3 (each).....10,500 lb.
Tank 2.....24,500 lb.

1—902.6 inches.
2—905.3 inches.
3—906.5 inches.
4—910.4 inches.

PASSENGER LOADING TABLE

Number of Pass.	Weight Lbs.	Moment / 1000
FORWARD COMPARTMENT CENTROID—582.0		
5	850	495
10	1,700	989
15	2,550	1,484
20	3,400	1,979
25	4,250	2,473
29	4,930	2,869
AFT COMPARTMENT CENTROID—1028.0		
10	1,700	1,748
20	3,400	3,495
30	5,100	5,243
40	6,800	6,990
50	8,500	8,738
60	10,200	10,486
70	11,900	12,233
80	13,600	13,980
90	15,300	15,728
100	17,000	17,476
110	18,700	19,223
120	20,400	20,971
133	22,610	23,243

CARGO LOADING TABLE

Weight Lbs.	Moment / 1000 Forward Hold Arm 680.0	Moment / 1000 Aft Hold Arm 1166.0
6,000		6,966
5,000	3,400	5,830
4,000	2,720	4,664
3,000	2,040	3,498
2,000	1,360	2,332
1,000	680	1,166
900	612	1,049
800	544	933
700	476	816
600	408	700
500	340	583
400	272	466
300	204	350
200	136	233
100	68	117

NOTE: THESE COMPUTATIONS ARE TO BE USED FOR TESTING PURPOSES ONLY.

FUEL LOADING TABLE

TANKS 1 & 3 (EACH)			TANK 2 (3 CELL)					
Weight Lbs.	Arm	Moment / 1000	Weight Lbs.	Arm	Moment / 1000	Weight Lbs.	Arm	Moment / 1000
8,500	992.1	8,433	8,500	917.5	7,799	22,500	914.5	20,576
9,000	993.0	8,937	9,000	917.2	8,255	23,000	914.5	21,034
9,500	993.9	9,442	9,500	917.0	8,711	23,500	914.4	21,488
10,000	994.7	9,947	10,000	916.8	9,168	24,000	914.3	21,943
10,500	995.4	10,451	10,500	916.6	9,624	24,500	914.3	22,400
11,000	996.1	10,957	11,000	916.5	10,082	25,000	914.2	22,855
11,500	996.8	11,463	11,500	916.3	10,537	25,500	914.2	23,312
12,000	997.5	11,970	12,000	916.1	10,993	26,000	914.1	23,767
FULL CAPACITY			**(See note at lower left)			26,500	914.1	24,244
**Note: Computations for Tank 2 weights for 12,500 lbs. to 18,000 lbs. have been purposely omitted.			18,500	915.1	16,929	27,000	914.0	24,678
			19,000	915.0	17,385	27,500	913.9	25,132
			19,500	914.9	17,841	28,000	913.9	25,589
			20,000	914.9	18,298	28,500	913.8	26,043
			20,500	914.8	18,753	29,000	913.7	26,497
			21,000	914.7	19,209	29,500	913.7	26,954
			21,500	914.6	19,664	30,000	913.6	27,408
			22,000	914.6	20,121	FULL CAPACITY		

Figure 18

8600. Determine the CG in percent of MAC. (See Figure 18.)

Basic Operating Weight.....105,000 lb.
Basic Operating Index.....92,827.0
(Moment/1,000)
MAC – 860.2 – 1040.9
Passenger Load:
Fwd compt.....Full
Aft compt.....Full
Fuel Load:
Tanks 1 and 3 (each).....10,500 lb.
Tank 2.....26,000 lb.
Cargo Load:
Fwd hold.....2,500 lb.
Aft hold.....1,500 lb.

1—25.5 percent MAC.
2—26.6 percent MAC.
3—27.7 percent MAC.
4—28.8 percent MAC.

8601. How should the landing gear be extended and the doors opened during the wheel well fire procedure?

1—Landing gear lever down, pull the landing gear control circuit breaker, then landing gear lever up.
2—Lower the main gear only by manual system.
3—Wheel well doors opened manually, discharge extinguisher, then wheel well doors closed manually.
4—Landing gear lever down, then momentarily up, then off.

8602. Determine the maximum takeoff EPR. (See Figure 19.)

Pressure altitude.....2,000 ft.
OAT.....59° F
Turbocompressors.....Nos. 2, and 3 ON
No. 4 OFF
Eng. A/I.....OFF

1—Eng. 1, 1.88; Eng. 2, 1.91; Eng. 3, 1.91; Eng. 4, 1.88.
2—Eng. 1, 1.85; Eng. 2, 1.83; Eng. 3, 1.83; Eng. 4, 1.85.
3—Eng. 1, 1.83; Eng. 2, 1.83; Eng. 3, 1.83; Eng. 4, 1.85.
4—Eng. 1, 1.91; Eng. 2, 1.88; Eng. 3, 1.88; Eng. 4, 1.91.

8603. Determine the maximum takeoff EPR. (See Figure 19.)

Pressure altitude.....Sea Level
OAT..... −10° C
Turbocompressors.....Nos. 2 and 3 ON
No.4 OFF
Eng. A/I.....ON

1—Eng. 1, 1.83; Eng. 2, 1.83; Eng. 3, 1.83; Eng. 4, 1.85.
2—Eng. 1, 1.85; Eng. 2, 1.83; Eng. 3, 1.83; Eng. 4, 1.85.
3—Eng. 1, 2.01; Eng. 2, 1.98; Eng. 3, 1.98; Eng. 4, 2.01.
4—Eng. 1, 1.98; Eng. 2, 1.98; Eng. 3, 1.98; Eng. 4, 2.01.

8604. With an in–flight engine fire, when should the second fire–extinguisher bottle be discharged?

1—30 seconds after the first one, if the fire warning light is still on.
2—15 seconds after the first one, if the fire warning bell rings again.
3—Immediately following the first one to ensure complete smother and cooling.
4—At least 1 minute after the first one, if the fire warning light is still on.

8605. After the shutdown of one engine, how many minutes of dump time would be required to reach maximum landing weight at the touchdown?

Cruise weight.....270,000 lb.
Max. landing weight.....207,000 lb.
Average fuel flow during dumping and descent to touchdown.....3,750 lb./hr./eng.
Time from start dump to landing.....21 min.
Fuel dump rate.....3,660 lb./min.

1—14.9 minutes.
2—16.1 minutes.
3—17.2 minutes.
4—21.0 minutes.

8606. What condition is necessary for arming an engine fire extinguisher?

1—The fire switch must be pulled out.
2—A fire signal must be present.
3—The battery switch must be on.
4—The bottle discharge button must be depressed.

8607. What indication can the flightcrew observe to assure that fire–extinguishing agent has discharged to the engine?

1—Engine fire switch light illuminated.
2—Bottle discharge light illuminated.
3—Yellow indicator disc missing.
4—Engine temperature gauges suddenly decrease.

8608. Which is an indication that the engine fuel shutoff valve has closed during the engine fire procedure?

1—EGT reduces and pump lights illuminate.
2—Valve light comes on momentarily, then goes off.
3—Fuel flow reduces to zero and engine shuts down.
4—Valve light comes on and goes off only when switch is placed off.

8609. How is the engine fuel shutoff valve closed during the engine fire procedure?

1—When the throttle is closed.
2—When the start lever is moved to cutoff.
3—When the extinguisher discharge switch is pressed.
4—When the fire switch is pulled.

MAX TAKEOFF EPR

DRY																				
	OAT	°F	−58	−40	−31	−22	−13	− 4	5	14	23	32	41	50	59	68	77	86	95	104	122
		°C	−50	−40	−35	−30	−25	−20	−15	−10	−5	0	5	10	15	20	25	30	35	40	50
E	T/C	ON	2.07	2.05	2.04	2.03	2.02	2.01	1.99	1.98	1.96	1.93	1.89	1.87	1.83	1.83	1.83	1.82	1.77	1.73	1.63
P		OFF	2.12	2.10	2.09	2.08	2.06	2.05	2.03	2.01	1.99	1.98	1.92	1.89	1.85	1.85	1.85	1.84	1.79	1.75	1.65
R	T/C	ON	2.06			2.02			1.98		1.93		1.88		1.83		1.78		MAX EPR FOR COLDER TEMPS AT PRESS ALT		
		OFF	2.11			2.06			2.01		1.96		1.91		1.85		1.80				
40 TO 80 KTS			5000			4000			3000		2000		1000		SL		−1000				
ENG A/I ON OR OFF																					

Figure 19

8610. After the shutdown of one engine, how many minutes of dump time would be required to reach maximum landing weight at the touchdown?

Cruise weight.....245,000 lb.
Max. landing weight.....185,000 lb.
Average fuel flow during dumping and descent to touchdown.....3,100 lb./hr./eng.
Time from start dump to landing.....24 min.
Fuel dump rate.....3,620 lb./min.

1—13.2 minutes.
2—14.9 minutes.
3—15.5 minutes.
4—16.6 minutes.

8611. Which is the preferred method of combating a brake fire on the ground?

1—Spray warm water fog over the wheel and brake assembly.
2—Keep the engine running to blow out the fire.
3—Use a dry chemical fire extinguisher.
4—Completely smother the gear with a foam extinguishing agent.

8612. An airplane has been cruising for 2 hours 45 minutes at a speed of Mach .80. Total fuel consumed during this period has been 34,000 lb. If Mach 1.0 is 589 knots, what has been the nautical air miles/1,000 lb. of fuel?

1—38.1 NAM/1,000 lb.
2—40.0 NAM/1,000 lb.
3—43.7 NAM/1,000 lb.
4—46.4 NAM/1,000 lb.

8613. An airplane has been cruising for 2 hours 40 minutes at a speed of Mach .84. Total fuel consumed during this period has been 34,000 lb. If Mach 1.0 is 590 knots, what has been the nautical air miles/1,000 lb. of fuel?

1—38.1 NAM/1,000 lb.
2—38.9 NAM/1,000 lb.
3—40.0 NAM/1,000 lb.
4—42.5 NAM/1,000 lb.

8614. An airplane has been cruising for 2 hours 15 minutes at a speed of Mach .82. Total fuel consumed during this period has been 27,250 lb. If Mach 1.0 is 595 knots, what has been the nautical air miles/1,000 lb. of fuel?

1—40.3 NAM/1,000 lb.
2—43.7 NAM/1,000 lb.
3—46.4 NAM/1,000 lb.
4—53.3 NAM/1,000 lb.

8615. When should the second freon agent bottle be discharged to combat an engine fire if the fire warning light remains on?

1—1 minute after the first one.
2—30 seconds after the first one.
3—15 seconds after the first one.
4—Immediately following the first one.

8616. You have an engine fire warning. The fuel shutoff valve light fails to illuminate when the fire switch is pulled. With the captain's permission, what action should be taken?

1—Manually close the fuel shutoff valve with the manual close lever, and discharge the fire bottle.
2—Turn both boost pumps off in the respective fuel tank, close the crossfeed valve to that engine, and discharge the fire bottle.
3—Push the fire switch in, then close the fuel shutoff valve switch. Recheck valve position light and repull the fire switch.
4—Immediately discharge the fire bottle and close the fuel shutoff valve switch.

8617. Determine the takeoff speeds for these conditions. (See Figure 20.)

Gross weight.....265,000 lb.
Pressure altitude.....3,500 ft.
OAT.....32° F
Tailwind.....7 kts.
Slope.....4% DOWN

1—V_1, 124; V_R, 132; V_2, 159.
2—V_1, 125; V_R, 134; V_2, 151.
3—V_1, 127; V_R, 136; V_2, 152.
4—V_1, 131; V_R, 135; V_2, 151.

8618. Determine the takeoff speeds for these conditions. (See Figure 20.)

Gross weight.....275,000 lb.
Pressure altitude.....6,000 ft.
OAT.....32° F
Headwind.....4 kts.
Slope.....1.0% UP

1—V_1, 136; V_R, 139; V_2, 154.
2—V_1, 137; V_R, 141; V_2, 153.
3—V_1, 139; V_R, 141; V_2, 154.
4—V_1, 135; V_R, 138; V_2, 153.

8619. Determine the takeoff speeds for these conditions. (See Figure 20.)

Gross weight.....305,000 lb.
Pressure altitude.....Sea level
OAT.....Std.
Tailwind.....7 kts.
Slope.....4% UP

1—V_1, 143; V_R, 148; V_2, 161.
2—V_1, 138; V_R, 144; V_2, 161.
3—V_1, 140; V_R, 144; V_2, 161.
4—V_1, 140 V_R, 146; V_2, 162.

8620. If an engine fire occurs in flight, what should be the first flight engineer action?

1—Fire switch – pull.
2—Essential power – check.
3—Start lever – cutoff.
4—Oxygen panel – emergency.

TAKEOFF SPEEDS

PRESS. ALT − 1,000 FT		OAT			
9 TO 10	°F			−65 TO 5	6 TO 82
	°C			−54 TO −15	−14 TO 28
7 TO 9	°F		−65 TO −7	−6 TO 37	38 TO 94
	°C		−54 TO −22	−21 TO 3	4 TO 34
5 TO 7	°F	−65 TO −22	−21 TO 31	32 TO 89	90 TO 101
	°C	−54 TO −30	−29 TO −1	0 TO 32	33 TO 38
3 TO 5	°F	−65 TO 23	24 TO 56	57 TO 104	105 TO 108
	°C	−54 TO −5	−4 TO 13	14 TO 40	41 TO 42
1 TO 3	°F	−65 TO 50	51 TO 97	98 TO 115	
	°C	−54 TO 10	11 TO 36	37 TO 46	
−1 TO 1 →	°F →	−65 →TO	95 TO 113	114 TO 120	
	°C ↓	−54 ↓ 34	35 TO 45	46 TO 50	

GROSS WT − 1,000 LB	V_1 V_R V_2	V_1 V_R V_2	V_1 V_R V_2	V_1 V_R V_2
340	150 156 171			
330	148 153 168	150 155 168		
320	145 150 166	147 152 166		
310	142 147 163	145 149 163		
300	139 144 161	142 146 161	144 148 160	
290	136 141 158	139 143 158	141 145 158	
280	133 138 155	135 140 155	138 142 155	
270	130 135 153	132 137 153	135 139 152	138 141 152
260	126 132 150	129 134 150	131 136 140	135 137 149
250	123 128 147	125 130 147	128 132 147	131 134 146
240	123 125 145	122 127 144	124 129 144	127 131 144
230	123 142	118 123 142	121 125 141	124 128 141
220	139	118 120 139	117 122 138	120 124 138
210	136	118 136	113 118 135	116 120 135
200	133	133	113 114 132	112 116 132
190	130	130	113 129	108 112 129
180		126	126	108 108 125
170			122	122
160			119	119

V_1 ADJUSTMENTS
WIND
ADD 1 KT PER 18 KTS HEADWIND
SUBTRACT 1 KT PER 3-½ KTS TAILWIND
SLOPE
ADD 1 KT PER .4% UPSLOPE
SUBTRACT 1 KT PER .4% DOWNSLOPE

Figure 20

8621. What is the proper sequence for discharging the fire-extinguishing agent?

1—Switch bottle transfer; pull fire switch; pull discharge switch.
2—Press discharge switch; pull fire switch and hold 30 seconds.
3—Pull fire switch and hold out; press discharge switch; switch bottle transfer immediately.
4—Pull fire switch; press discharge switch and hold 1 second.

8622. What is the function of the bottle transfer switch?

1—Selects freon bottle to be discharged.
2—Opens the engine selector control valves.
3—Arms the freon bottle for its second shot.
4—Selects the engine to which the freon is discharged.

8623. What is the indication of a thermally discharged extinguisher bottle with electrical power on?

1—Only the red disc is blown out.
2—The yellow disc is blown out and the bottle discharge light is on.
3—The red disc is blown out and the bottle discharge light is on.
4—Only the yellow disc is blown out.

8624. What causes the bottle discharge light to illuminate?

1—Pressing the discharge switch.
2—Complete depletion of the CO_2 charge.
3—Low pressure in the bottle.
4—Extinguishing of the engine fire.

8625. If the fire-extinguisher bottles had been discharged to engines Nos. 1 and 2 by normal methods, what would be the external indication?

1—Two red discs missing.
2—One red disc missing.
3—Two yellow discs missing.
4—One yellow disc missing.

8626. In the fire-extinguishing system, a blown red indicator disc reveals that the

1—manifold to the engine has been pressurized.
2—maximum temperature at the bottle has been exceeded.
3—nitrogen precharge is low.
4—contents of all bottles have been discharged.

8627. If two engine fire-extinguisher bottles had thermally discharged, what would be the external indication?

1—Two red discs missing.
2—Two yellow discs missing.
3—One red disc missing.
4—One yellow disc missing.

8628. A ruptured yellow fire-extinguisher discharge disc indicates that

1—pressure limits have been exceeded in all fire-extinguisher bottles.
2—at least one fire-extinguisher bottle has been intentionally discharged from the cockpit.
3—at least one fire-extinguisher bottle has been discharged from over temperature.
4—all fire-extinguisher bottles have been intentionally discharged.

8629. During the preflight inspection, the engine fire-extinguisher system should be checked for

1—volume of carbon dioxide in the container.
2—air preload pressure.
3—bottle pressure limits at ambient temperature.
4—flood control valve freedom of operation.

8630. What fire detection means, if any, is provided for the lower cargo compartment?

1—No equipment is installed to detect a Class D compartment fire.
2—The fire bell rings, but no warning light illuminates.
3—Flames can be observed through the viewing ports in the cabin floor.
4—Smoke detector tubes on the flight engineer's panel.

8631. When an engine fire warning occurs in flight, actuation of the cutout switch will

1—silence the bell and put the light out.
2—silence the bell but the light will remain on.
3—put the light out but the bell will continue to ring if the fire is still present.
4—reset the light and the bell circuits in preparation for a second fire.

8632. How should the flight controls be positioned to facilitate passenger evacuation through the overwing exits?

1—Speed brake lever up.
2—Flaps full down.
3—Flaps halfway down (24°).
4—Speed brake lever halfway up (20°).

8633. Which precaution is advisable when using a portable CO_2 fire extinguisher?

1—Do not use on fires where flammable fluids or magnesium are burning.
2—Protect against inhaling CO_2 by using 100 percent oxygen.
3—Beware of shock when using for an electrical fire because CO_2 is conductive.
4—Spray extinguishant at the top of the fire to prevent spreading.

8634. What source provides power to operate the emergency exit lights?

1—The aircraft battery.
2—The essential a.c. bus.
3—Batteries contained in each light.
4—Dry-cell battery packs located in each raft.

8635. What action should be taken if an engine is windmilling at 19.5 percent N_1 and 25.5 percent N_2 when operating at FL350 and 240 knots ? (See Figure 21.)

1—The engine should not be started because the N_1 and N_2 RPM's are out of tolerance.
2—The engine should not be started because the N_2 RPM is out of tolerance.
3—The engine may be started under the existing conditions.
4—The engine may be started if the airspeed is reduced.

8636. An engine has been shut down and later, a requirement arises for the use of that engine's power. Which of the following is correct concerning the decision of whether or not to restart that engine?

1—Do not restart if the EGT has dropped to ambient.
2—Do not restart an engine that has been shut down due to fire or fire warning.
3—The engine may not be restarted if it is windmilling within the air-start range.
4—The engine may be restarted but is limited to 5 minutes operation.

INFLIGHT ENGINE START ENVELOPE

IAS KNOTS		PRESSURE ALTITUDE 1000 FT								
		0	5	10	15	20	25	30	35	40
V_{MO}/M_{MO}	N_1%	18	20	22	23	25	26	26	26	27
	N_2%	27	29	32	34	37	37	35	34	33
400					23	25				
					34	36				
380		18	19	21	22	24	26			
		27	28	30	32	34	37			
360		17	18	20	21	23	25			
		25	27	28	30	32	34			
340		16	17	19	20	21	24	26		
		24	25	27	28	30	33	35		
320		15	16	18	19	20	22	25		
		22	23	25	27	28	31	33		
300		14	16	17	18	19	21	23	26	
		21	22	23	25	27	29	31	33	
280		13	15	16	17	18	20	22	24	
		19	20	22	23	25	27	29	31	
260		13	14	15	16	17	18	20	22	26
		18	19	20	21	23	25	26	29	31
240		12	13	14	15	16	17	18	20	23
		17	17	18	19	21	23	24	26	29
220		11	12	13	14	15	16	17	18	20
		15	16	17	18	19	21	22	24	26

NOMINAL WINDMILLING RPM
TOLERANCE ± 3%

Figure 21

8637. Which type portable fire extinguisher is most desirable for use on galley fires?

1—Carbon dioxide.
2—Water with antifreeze agent.
3—Dry chemical.
4—Freon.

8638. If, during cruise flight, a precautionary shutdown is required for reasons other than fire, which procedure should be followed?

1—Place the hydraulic pump switch off and the start lever to cutoff.
2—Allow the engine to stabilize at idle speed prior to shutdown.
3—Switch essential power to an operating generator and pull the engine fire switch.
4—Place the bleed air switch to close and the start lever to cutoff.

8639. What action is required if any engine EGT limit is exceeded?

1—Pull the fire switch out.
2—Close the fuel shutoff valve.
3—Record peak EGT and length of time at that limit.
4—Place the start lever in CUTOFF position.

8640. If a precautionary engine shutdown is made while in cruise flight, what action should be taken to prevent damage to the windmilling engine and components?

1—Open the hydraulic supply valve to prevent overheating of the engine-driven hydraulic pump.
2—Restore fuel flow to the engine a minimum of 3 minutes each 30 minutes to prevent the fuel control from overheating.
3—Open the pneumatic relief valve to bleed internal engine pressures.
4—Restore the engine oil supply to prevent bearing overheat and possible seizure.

8641. What action should be taken if the engine has stabilized at idle RPM and the oil pressure is indicating 30 PSI with the oil pressure warning light illuminated?

1—Operate the engine for 1 more minute; recheck and, if indications are the same, shut down the engine.
2—Shut down the engine immediately.
3—Pull the fire switch and discharge the freon.
4—Increase RPM to 80 percent; if oil pressure does not increase, shut down the engine.

8642. What action is required by the crew if the low oil pressure light comes on in flight with normal indicated oil pressure?

1—Retard the throttle; if the light goes out, shut down the engine.
2—Shut down the engine.
3—Continue to operate the engine until the oil pressure drops.
4—Retard the throttle; if the light does not go out, shut down the engine.

8643. Which action should be taken if a start is aborted because of excessive EGT?

1—Move the start lever to cutoff and leave the continuous ignition on.
2—Move the start lever to cutoff and hold the start switch in ground.
3—Move the start lever to idle and hold the start switch in ground for 20 seconds, then change both to off.
4—Place the start switch off, then move the start lever to cutoff after 20 seconds.

8644. What should be done if a start switch is inadvertently released during engine starting?

1—Immediately re-engage the start switch.
2—Allow the engine to spin down to zero N_2 before re-engaging the start switch.
3—Wait until the engine spins down below 35 percent N_2 before re-engaging the start switch.
4—Wait until there is an indication of zero N_1 and then repeat the entire starting sequence.

8645. What should be done if the start lever is inadvertently moved to the IDLE position before the light-off occurs?

1—Move the start lever back to START position.
2—Leave the start lever in IDLE position and continue the start.
3—Move the start lever to CUTOFF position, then release the start switch.
4—Release the start switch, then move the start lever to cutoff.

8646. What are indications of an impending hot start?

1—Turbine temperature above limits and high fuel flow.
2—EGT rising rapidly; low fuel flow; slow acceleration.
3—EGT rising slowly; low fuel flow; rapid acceleration.
4—EGT rising rapidly; high fuel flow; slow acceleration.

8647. Which procedure can be used to start an engine with an inoperative start valve?

1—Cross-bleed from an operating engine.
2—Place engine start switch in FLIGHT position.
3—Ground crewman opens the valve manually.
4—Place start lever in idle before placing engine start switch in ground.

8648. If the fuel tank temperature is 0° C or below, which action should be taken?

1—Turn fuel heat on for 1 minute prior to takeoff.
2—Turn fuel heat on and leave on until fuel temperature reaches +5° C.
3—Turn fuel tank heaters on for takeoff and climb.
4—Turn fuel tank heaters on to maintain fuel temperature above 0° C.

8649. In addition to valve intransit light operation, what is an indication that the fuel heat valve has opened?

1—Engine oil temperature increase.
2—Engine EPR increase.
3—Engine EGT increase.
4—Engine fuel temperature increase.

8650. During takeoff and final approach, which system should not be used?

1—Engine anti-ice.
2—Fuel heater.
3—Rain repellent.
4—Continuous ignition.

8651. Which step activates ignition during a normal start procedure on the ground?

1—Moving the start lever out of cutoff position.
2—Closing the starter switch.
3—N_2 RPM reaching 10 percent.
4—Placing the ignition switch in the GROUND position.

8652. What is an indication of engine light-off during an engine start?

1—Rise of fuel pressure.
2—Rise of RPM.
3—Rise of EGT.
4—Rise of oil pressure.

8653. At sea level, what is the minimum duct pressure for engine start?

1—22 PSI.
2—30 PSI.
3—45 PSI.
4—60 PSI.

8654. During a normal engine start, what is a visual indication of starter cutout?

1—Fluctuation of starter control system amperage.
2—Reduction of starter speed.
3—Increase of duct pressure.
4—Oil pressure light going out.

8655. Which RPM indication is to be observed when the start lever is placed in start?

1—N_2 rotating; N_1 zero.
2—N_1 15 percent; N_2 rotating.
3—N_2 15 percent; N_1 rotating.
4—N_2 20 percent; N_1 15 percent.

8656. Which is indicated by illumination of the reverser operating light on the center instrument panel?

1—The clam shell doors are closed in reverse position.
2—Reverse power is being applied.
3—The reverser deflector door is unlocked.
4—The reverser system has operated inadvertently.

8657. If an engine is started with the N_2 tachometer inoperative, which means should be used to assure N_2 rotation?

1—Fuel flow indication.
2—Observation of turbine rotation by maintenance personnel.
3—Oil pressure indication or CSD low oil pressure light out.
4—Light off and EGT rise.

8658. During start, when should the start lever be moved to the START position on an engine with an inoperative N_2 tachometer?

1—After the CSD oil pressure light is extinguished.
2—After fuel pressure indicates about 8 to 10 PSI.
3—At the first N_1 indication.
4—After oil pressure indicates 20 PSI.

8659. Duct air is supplied to the starter through

1—an electrically controlled and hydraulically operated valve.
2—an electrically controlled and pneumatically operated valve.
3—a pneumatically controlled and operated valve.
4—an electrically controlled and operated valve.

8660. Which is a normal indication on the engine oil temperature gauge as engine power is changed?

1—Temporary decrease of temperature when thrust is reduced.
2—Temperature following thrust changes with no lag.
3—Temperature remaining absolutely steady despite large thrust changes.
4—Temporary increase of temperature when thrust is reduced.

8661. What may excessive use of fuel heat cause?

1—Fuel flow fluctuations.
2—Fuel temperature exceeding limits.
3—High or fluctuating oil pressure.
4—Higher than normal oil temperature.

8662. The engine pressure ratio gauge indicates which of the following comparisons?

1—Combustor discharge pressure to inlet guide vane pressure.
2—Turbine discharge differential pressure to turbine inlet differential pressure.
3—Turbine discharge pressure to engine inlet pressure.
4— Combustor discharge gauge pressure to engine inlet gauge pressure.

8663. What pneumatic system factor is indicated by the low-pressure duct indicator?

1—Pressure in the center section between the wing valves.
2—Pressure in the cabin sidewall ducts.
3—Difference between engine bleed pressure and pneumatic duct pressure.
4—Difference between cabin inlet duct pressure and cabin pressure.

8664. What is a function of the wing valves of the pneumatic system?

1—Isolate a leaking wing duct in flight.
2—Prevent the use of turbocompressor air for wing anti-icing.
3—Prevent the use of No. 2 turbocompressor air in the right pack.
4—Isolate the air-conditioning pack valves from each other.

8665. Which condition is indicated if the synchronizing lights are flashing alternately?

1—Normal condition; the generators may be paralleled.
2—Low frequency; operate the generator isolated.
3—Either low or high frequency; the generator should not be used.
4—Phase reversal; the generator should not be used.

8666. Both the ram air input passage and the drain hole of a pitot system are blocked by ice. What erroneous indication will appear on the Machmeter when descending at a constant-thrust setting.

1—Remains fixed at a constant value.
2—Mach number gradually decreases.
3—Mach number gradually increases.
4—Drops to the minimum value shown on the indicator.

8667. What is indicated by the illumination of the wing anti-ice overheat light?

1—One wing anti-ice valve has closed and cannot be reset in flight.
2—The wing leading edges are overheating; the control switch should be turned off.
3—All engine bleed air valves have closed.
4—All wing anti-ice valves have closed.

8668. Which control position is necessary to communicate with ground maintenance personnel from the cockpit?

1—Ground crew call button must be held on.
2—One VHF NAV COM must be on with 121.5 MHz selected.
3—Service interphone switch on the flight engineer's panel must be on.
4—Audio selector panel must be set for flight interphone.

8669. What is the recommended procedure if a left or right engine anti-ice valve fails to open in flight and icing conditions are encountered?

1—Operate the affected engine at idle RPM.
2—Operate the affected engine at highest practicable power until clear of icing conditions.
3—Operate the affected engine at minimum cruise power during icing penetration.
4—Shut down the affected engine until clear of icing conditions and all nacelle ice has dissipated.

8670. What is normal hydraulic system pressure and relief valve full-open pressure?

1—2,000 PSI and 3,000 PSI.
2—3,000 PSI and 3,500 PSI.
3—3,000 PSI and 4,000 PSI.
4—3,250 PSI and 3,500 PSI.

8671. Under which condition should the cockpit window heat be off during flight?

1—During takeoff with ambient temperature 80° F or hotter.
2—When an inner pane of glass has been cracked.
3—At all times below 10,000 ft.
4—When cruising with ambient temperature 10° C above standard or hotter.

8672. Which pressurization limitations are applicable for a cracked windshield?

1—Outer pane only – 5 PSI; inner pane only – normal operation; both panes – 2 PSI.
2—Outer pane only – normal operation; inner pane only – normal operation; both panes – 1 PSI.
3—Outer pane only – normal operation; inner pane only – 5 PSI; both panes – 2 PSI.
4—Outer pane only – 5 PSI; inner pane only – 2 PSI; both panes – 1 PSI.

8673. In the event of arcing at the captain's windshield, the winshield anti-ice system should be turned off. In addition, the airspeed should be restricted if flying

1—below 10,000 ft.
2—above 20,000 ft.
3—in freezing rain or sleet.
4—at altitudes where ambient temperature is 5° C or less.

8674. What procedure is recommended if the inner and outer layers are broken in one windshield panel?

1—Remove heat from that window and continue the flight without restriction.
2—Place the heat switch to low and increase cabin altitude.
3—Remove heat from that window and reduce cabin pressure.
4—Remove heat from all windows on that system.

8675. What is the approximate maximum altitude to maintain a 10,000-foot cabin altitude when pressurization is limited because the inner pane of the windshield is cracked?

1—15,000 ft.
2—20,000 ft.
3—25,000 ft.
4—30,000 ft.

8676. What action should be taken if a nose cowl valve fails to open when the nacelle anti-ice switch is turned on with ice accumulated on the cowl?

1—Increase thrust to a minimum of 80 percent N_1.
2—Reduce thrust until ice accumulation is ingested.
3—Hold the anti-ice switch in the MANUAL ON position until ice is melted.
4—Shut down the engine to prevent compressor damage.

8677. Which restriction is applicable when the window heat switch is placed off because of an uncontrollable window overheat condition?

1—Reduce cabin differential pressure to zero.
2—Reduce airspeed to 250 knots above 14,000 ft.
3—Reduce airspeed to 250 knots below 10,000 ft.
4—Increase cabin pressure to 10,000 ft.

8678. What is indicated when a cockpit window overheat light illuminates?

1—The window has overheated and power should be removed.
2—The window has overheated and power has been removed.
3—A window is reaching the maximum heat limits and power to that window should be reduced.
4—A window is reaching the maximum heat limits and power to all windows should be reduced.

8679. When is overheat protection provided for the wing anti-ice system?

1—When the wing anti-ice switch is on.
2—During ground test.
3—When airspeed is below 150 knots.
4—When the wing anti-ice valves are full open.

8680. When engine icing is suspected during flight, normal procedure is to

1—turn anti-icing on, then turn engine ignition on.
2—turn engine ignition on, then turn anti-icing on.
3—limit the use of anti-icing for a maximum of 10 minutes.
4—turn engine ignition off after 10 minutes of operation.

8681. What precaution should be observed prior to turning on engine anti-icing during icing conditions?

1—Turn off continuous ignition.
2—Place the starter switch to normal.
3—Turn on continuous ignition.
4—Reduce power until engine RPM stabilizes.

8682. Which are indications that ice may be forming in the engine inlet?

1—Ice detector light on or decreasing fuel flow.
2—Ice forming on unheated cockpit windows or surging N_1 RPM's.
3—Ice forming on the windshield wiper components or erratic EPR's.
4—Ice forming on the windshield wiper blade or low EPR's.

8683. How should the window heat system be checked on preflight?

1—Switch on low, press overheat light – light on; switch off – light out.
2—Press to test overheat light; switch on low – power light on; switch on reset – lights out.
3—Switch on high, press overheat light – light on; switch off – light out.
4—Press to test power and overheat lights; switch on high – power light on; switch on reset – overheat light on; switch off – lights out.

8684. When should rain repellent be used?

1—If temperature plus dew point is 78° F or less.
2—Only when wipers are inoperative.
3—When wipers are inadequate to remove water.
4—If rain is heavy, only once each hour.

8685. Which precaution should be used when applying rain repellent during medium or heavy rain?

1—Apply to second windshield only after repellency is established on the first windshield.
2—Do not use windshield wipers after repellent has been applied.
3—Use wipers at the slowest speed and apply to all windshields simultaneously.
4—Do not apply repellent to a windshield more than once per flight.

8686. Normal operation of pitot heat is

1—off until airborne, then on for the remainder of the flight.
2—on from before takeoff to after landing.
3—on from takeoff to 10,000 ft., then off.
4—on if OAT is below 5° C (41° F) with visible moisture, otherwise off.

8687. What must be accomplished if there is a hydraulic fluid loss after the landing gear has been extended and locked down?

1—Manual extension procedure for the main gear to assure they remain locked down.
2—Manual extension procedure for both main gear and nose gear.
3—Manual extension procedure for the nose gear.
4—Manual extension procedure only if the nose gear does not have a down and locked indication.

8688. How can the main gear be stopped halfway up when doing the landing gear in-flight inspection procedure?

1—Rudder spoiler pump off.
2—Depressurize the utility pumps.
3—Landing gear lever off.
4—Manually crank each gear halfway.

8689. During manual landing gear extension, where should the landing gear handle be placed?

1—Manual down.
2—Down.
3—Bypass.
4—Off.

8690. After manual landing gear extension, how is the safety of the nose gear checked?

1—Check for emergency down-lock pin engagement by use of the handcrank.
2—Close No. 3 throttle; if the horn does not sound, the nose gear is safe.
3—Push to test the nose gear green light; if the light goes out, the gear is safe.
4—Visually check the position of the nose gear emergency down-lock pin.

8691. Which events can cause the engine No. 2 hydraulic pump low-pressure light to illuminate?

1—Engine fire switch pulled, pump pressure low, or pump switch off.
2—Pump failure, pressure below 1,200 PSI, or fluid supply switch closed.
3—Pump failure, pump switch on, or engine fire switch pulled.
4—Pressure below 1,200 PSI, fluid supply switch closed, or pump switch on.

8692. What is the indication that the landing gear is safe and the antiskid is prepared for landing?

1—Red door lights on, green gear lights on, and antiskid annunicators rel.
2—Red door lights out, green gear lights out, and antiskid annunciators on.
3—Red door lights out, green gear lights on, and antiskid annunciators rel.
4—Red door lights on, green gear lights on, and antiskid annunciators on.

8693. While performing the preflight cockpit inspection, you observe the parking brake light on and brake pressure gauge reading 500 PSI. What does this indicate?

1—Hydraulic pressure is applied to the brakes.
2—Both brake pedals on one side are in the parked position.
3—One or both brake pedals on one side are depressed to the parked position, and 500 PSI hydraulic pressure is applied to the brakes.
4—The parking brake lever is in the parked position.

8694. Which condition is required before checking the lockout deboost valve for proper servicing?

1—Brake gauge above precharge pressure and brakes off.
2—Brake gauge above precharge pressure and parking brake set.
3—Main antiskid switch off and brakes off.
4—Parking brake light on and antiskid switch off.

8695. What trouble is probable if a hydraulic system pressure gauge indicates zero pressure during cruising flight?

1—Hydraulic pump failure.
2—Total loss of all fluid.
3—Loss of accumulator precharge.
4—Loss of bleed air reservoir pressurization.

8696. Which control position applies automatic braking to the main gear wheels?

1—Landing gear lever – up.
2—Parking brake lever – pull.
3—Antiskid switch – on.
4—Hydraulic brake interconnect – open.

8697. During cruise flight, the brake pressure gauge indicates zero. Other hydraulic system gauges have normal indications and no amber or red indicator lights are on. What condition is indicated?

1—Electrical power to both hydraulic pumps has been interrupted.
2—Accumulator preload has been lost.
3—Landing gear retraction has shut off system pressure to the brakes in the normal manner.
4—Fluid has been lost to the point that all lockout cylinders have bottomed out.

8698. Which is a feature of the pneumatic emergency brake system?

1—Differential braking is available with the pneumatic system.
2—The pressure to the brakes cannot be regulated with the pneumatic system.
3—Pneumatic braking locks all the main gear wheels.
4—The antiskid system is not effective when pneumatic braking is utilized.

8699. From where does the brake system normally receive pressure?

1—Utility hydraulic system.
2—Trapped air pressure.
3—Brake accumulator.
4—Auxiliary hydraulic system.

8700. Which item prevents system pressure loss in the event of brake line failure at the inlet to the shuttle valve?

1—Antiskid valve.
2—Lockout debooster.
3—Power brake control.
4—Gear down sequence valve.

8701. What is the source of pressure to the brakes when the interconnect valve is opened prior to engine start?

1—Either utility pump.
2—Rudder auxiliary pump.
3—Either auxiliary pump.
4—Rudder and spoiler auxiliary pump.

8702. Which statement is appropriate for aircraft utilizing the liquid type rain repellent system? (See Figure 22.)

1—Do not use rain repellent while windshield heat is in HIGH position.
2—If rain repellent is inadvertently applied to a dry windshield, do not operate the wipers.
3—Depress both rain repellent buttons simultaneously and hold until flow starts.
4—Do not use while aircraft is on the ground.

8703. How may the wing anti-icing system be tested before takeoff? (See Figure 22.)

1—Place the switch on and note a duct temperature rise as engine power is advanced above idle.
2—Hold the switch to ground test and note the overheat light is on; release switch and note the light goes out.
3—Hold the switch to ground test and note duct temperature rise for each pylon.
4—Place the switch on and note an immediate duct temperature rise for each engine.

8704. Which is an indication that a wing anti-ice valve has opened? (See Figure 22.)

1—Amber valve position light is on.
2—Intransit light is on then out.
3—Increase in duct temperature.
4—Momentary illumination of the overheat light.

8705. What action should be taken if the cockpit window power on light remains illuminated when the window heat switch is turned off? (See Figure 22.)

1—Nothing, this is a normal indication with the switch off.
2—Check that the cockpit windows are latched.
3—Place both window heat switches to LOW position.
4—Pull the system circuit breaker.

8706. What are indications of a wing anti-icing duct overheat? (See Figure 22.)

1—Wing anti-icing overheat light illuminated in the air only.
2—Duct temperature gauge above 95° C in the air only.
3—Duct overheat light illuminated on the ground only.
4—Duct temperature gauge off-scale high on the ground only.

8707. What does the Q inlet heat amber light indicate when illuminated? (See Figure 22.)

1—The heater is operating.
2—The switch is off.
3—The heater valve has failed closed.
4—There is no electric power to the heater.

8708. How is braking action accomplished when using the emergency pneumatic system?

1—By positioning the brake interconnect valve on the flight engineer's panel to emergency and using the brake pedals as usual.
2—By positioning the pneumatic brake control valve full open and allowing the antiskid system to relieve excess pressure.
3—By opening the pneumatic brake control valve and using the brake pedals as usual.
4—By opening the pneumatic brake control valve and metering pressure to all brakes.

8709. Which rule applies to the flap-operated landing gear warning device?

1—May not use part of the throttle actuated system.
2—Must have a horn silencing switch on the control pedestal.
3—Must actuate only when at least one throttle is moved to idle position.
4—May not have a manual shutoff.

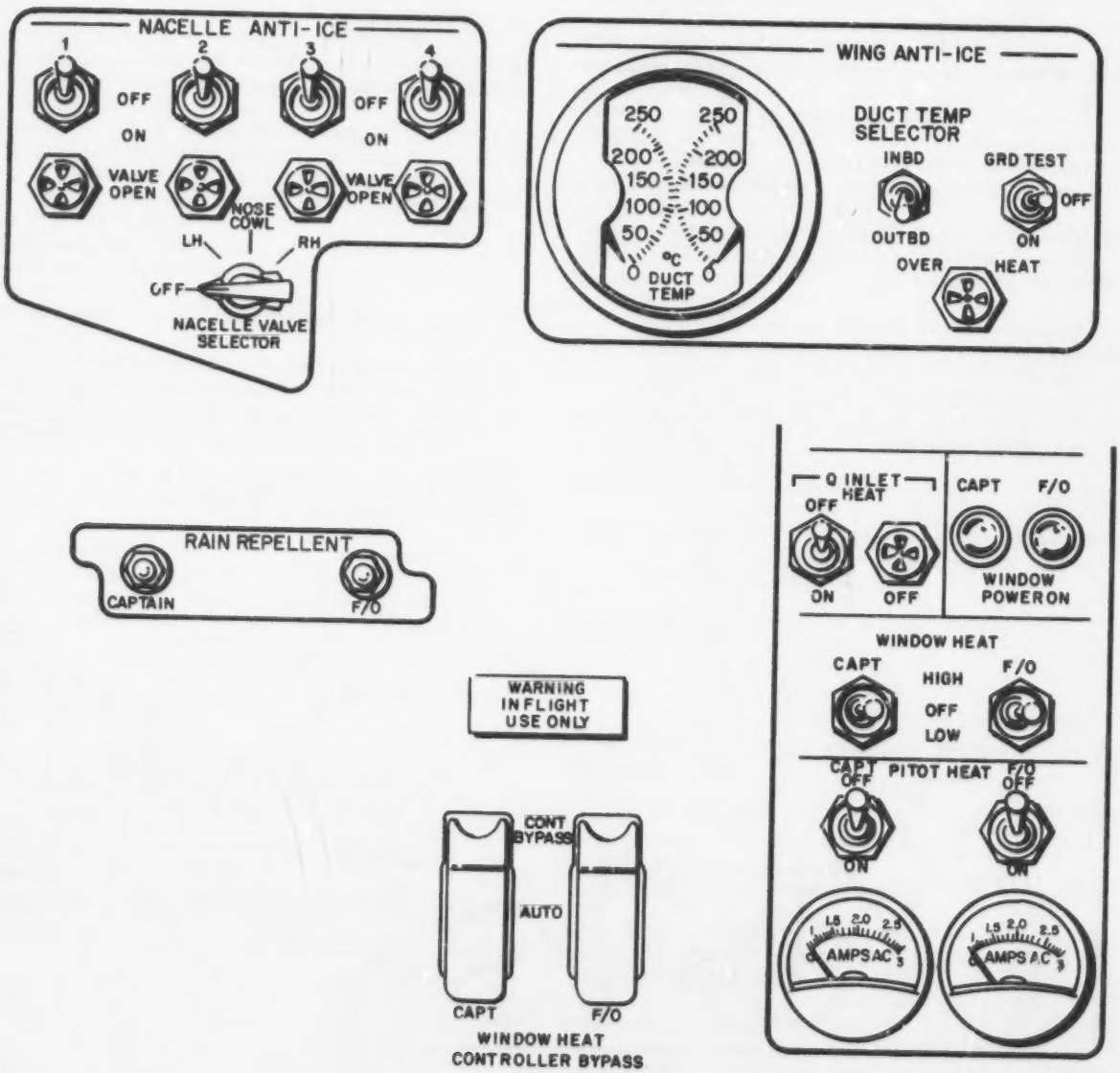

Figure 22

8710. When can the pilot's warning horn cutout be used to silence the warning horn?

1—If the gear handle is out of the down detent, with the aircraft on the ground.
2—If any thrust lever has been closed; gear not down.
3—When the wing flaps are extended beyond 35°; gear not down.
4—If the cabin altitude exceeds 10,000 ft.

8711. What is an indication of a leak in the auxiliary hydraulic system? (See Figure 23.)

1—Quantity dropping below 3 gallons.
2—Quantity dropping to approximately 3 gallons.
3—Both utility pump low-pressure lights on.
4—Both auxiliary system pump low-pressure lights on.

8712. What is indicated by illumination of the hydraulic oil overheat light? (See Figure 23.)

1—Overheated utility return fluid or faulty auxiliary pump.
2—Overheated fluid in a utility or auxiliary system pressure line.
3—Overheated fluid in a return line to a reservoir.
4—Overheated fluid in the utility system heat exchanger.

8713. What is the effect of opening the system interconnect with utility pumps on and auxiliary pumps off? (See Figure 23.)

1—The auxiliary system would not be pressurized.
2—Hydraulic power would be supplied only to the inboard spoilers.
3—Hydraulic brake pressure would increase to 3,000 PSI.
4—The rudder and inboard spoilers would be supplied with hydraulic power.

8714. If the flaps are extended to final landing configuration but the gear is not down and locked, the warning horn will sound

1—intermittently and cannot be silenced by the cutout.
2—steadily, until silenced by the cutout.
3—steadily, and cannot be silenced by the cutout.
4—intermittently, until silenced by the cutout.

8715. What is the correct sequence of switch positions to dump fuel?

1—All boost pumps on; dump valve switches open; nozzle valve switches open.
2—Dump chute extend; valve open; chute retract; chute drain.
3—Main boost pumps on; dump chute switches extend; dump valve open.
4—Dump chute extend; cross-feeds open; dump valve open.

8716. Which is an indication, in addition to the green lights, that the main landing gear is locked down?

1—Antiskid indicators showing REL.
2—Landing gear door warning light(s) off.
3—Nosewheel steering system is pressurized.
4—Landing gear door warning light(s) on.

8717. The landing gear safety lock will prevent gear control lever movement to the UP position unless the

1—airplane is airborne, and wheel rotation has been stopped.
2—hydraulic pressure is up and nosewheels are centered.
3—main gear shock struts are extended.
4—airplane is airborne, all gear doors are open, and nosewheel is centered.

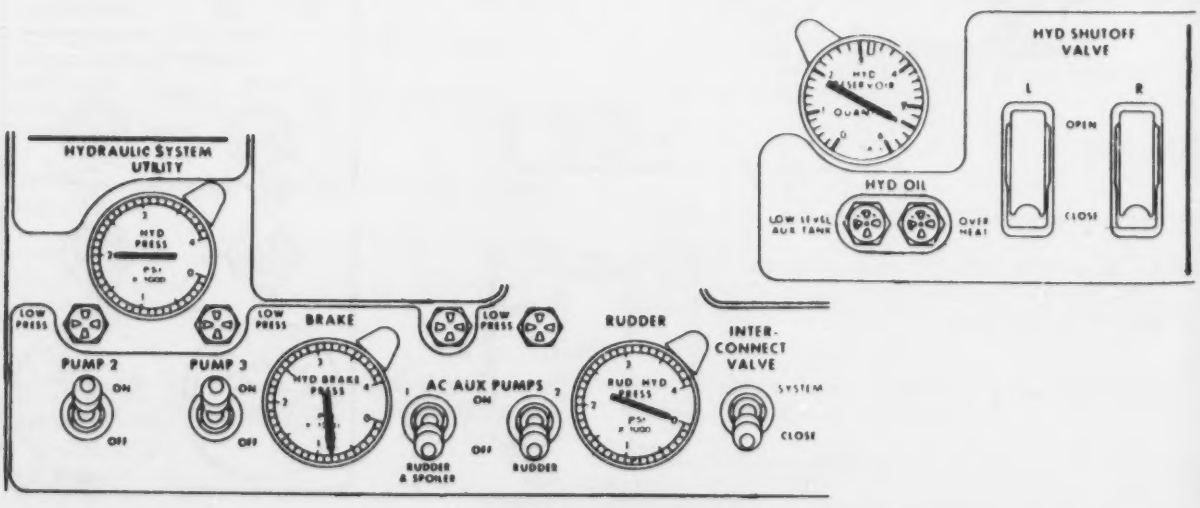

Figure 23

8718. Which engines drive variable displacement hydraulic pumps?

1—Engines Nos. 1 and 3.
2—Engines Nos. 1 and 2.
3—Engines Nos. 1, 2, 3, and 4.
4—Engines Nos. 2 and 3.

8719. What action should be taken if a fuel boost pump light comes on?

1—Place the affected boost pump switch off.
2—Cross-feed the affected engine from any tank with two operating pumps.
3—Check the fuel temperature for icing conditions; apply fuel heat if required.
4—Press to test the light; if it goes out, only the light circuit is faulty.

8720. Which operation is not possible in the event of the malfunction of both boost pumps in No. 3 tank?

1—Use of No. 3 tank fuel for tank-to-engine operation.
2—Fuel transfer to No. 3 tank.
3—Use of No. 3 tank fuel for No. 2 engine.
4—Operation of No. 3 engine from No. 2 tank.

8721. Which procedure should be used to maintain an equal fuel balance when a fuel quantity gauge is inoperative?

1—All cross-feed valves – open.
2—Adjust thrust as necessary to maintain even fuel flow readings.
3—Vary cross-feed valve position and boost pump operation to maintain balanced fuel flow readings at even EPR settings.
4—All boost pump switches – off.

8722. What is the normal fuel system selection when feeding all four engines from the center tank?

1—Both center pumps on and all main tank pumps on.
2—Both center pumps on and one in each main tank on.
3—Both center pumps on and all main tank pumps off.
4—Right and left pumps on and all fore and aft pumps off.

8723. The fuel quantity indicator for the No. 1 tank indicates the

1—pounds of usable fuel in the tank based upon fuel temperature of 59° F.
2—total pounds of fuel in the tank regardless of fuel density.
3—pounds of usable fuel in the tank regardless of fuel density.
4—total gallons of fuel in the tank based upon 6.7 lb./gal. fuel density.

8724. Which is an indication of proper flight recorder operation when the switch is placed in test position?

1—Meter indicating in normal range.
2—Green light out; amber light on.
3—Amber light out.
4—Steady tone in cockpit speaker.

8725. The flight recorder automatically records the airplane's

1—airspeed, altitude, time, heading, and rate of climb or descent.
2—acceleration, indicated altitude, Mach, and compass heading.
3—course, altitude, Mach, vertical acceleration, and flight time.
4—indicated airspeed, pressure altitude, heading, vertical acceleration, and elapsed time.

8726. What is the relationship between static air temperature and ram air temperature in cruising flight at high altitude?

1—Static air temperature is always lower (colder) than ram air temperature.
2—Static air temperature minus ram air temperature equals true air temperature.
3—Ram air temperature plus true air temperature equals static air temperature.
4—Ram air temperature is always lower (colder) than static air temperature.

8727. Which type of temperature indication is provided by the total air temperature gauge?

1—Ambient air temperature.
2—Ram air temperature corrected for ram rise.
3—OAT plus ram rise.
4—OAT corrected for static system error.

8728. What should be the setting of the maximum-speed needle on the airspeed indicator during preflight inspection with electrical power on?

1—V_{REF}.
2—M_{MO}.
3—V_{MO}.
4—Zero.

8729. Which signal alerts the flightcrew if the V_{MO} or M_{MO} is exceeded?

1—A steady bell will ring.
2—An intermittent horn will sound.
3—An intermittent bell will ring.
4—A steady horn will sound.

8730. Which instruments in the captain's KIFIS (air data computers system) would be completely inoperative without electrical power?

1—Altimeters and Machmeters.
2—Airspeed indicators and true airspeed indicator.
3—Altimeters and static air temperature.
4—True airspeed indicator and static air temperature.

8731. What should the utility system pressure gauge indicate with the engines OFF and system interconnect closed?

1—Zero.
2—750 PSI.
3—2,000 PSI.
4—3,000 PSI.

8732. During preflight, you check the static ports for being open and clean. With which systems are these ports associated?

1—Flight instruments, cabin pressure control, autopilot, and cabin altimeter.
2—Flight instruments, autopilot, cabin pressure control, and flight recorder.
3—Flight instruments, autopilot, flight recorder, and cabin altimeter.
4—Flight instruments, cabin pressure control, flight recorder, and cabin altimeter.

8733. When will a fire warning light go out once it has been illuminated by a fire?

1—When the fire switch is pulled.
2—When the fire is extinguished.
3—When the bottle low-pressure light illuminates.
4—When the bell silencing button is depressed.

8734. Which action should the flight engineer take to deactivate electric trim in the event of a runaway stabilizer that cannot be controlled by the stabilizer trim cutout switches?

1—Pull the stabilizer trim circuit breakers.
2—Turn the battery switch off.
3—Rotate the essential power selector to standby.
4—Open all generator breaker switches.

8735. What precaution should be taken when landing in snow or slush?

1—Do not use reverse thrust below 80 knots IAS.
2—Turn engine fuel heat on prior to landing.
3—Leave flaps down until they can be checked.
4—Turn wing anti-ice on prior to landing.

8736. How should the inboard flaps be operated if they stop before reaching the selected setting, but there is no indication of an asymmetrical condition?

1—That set of flaps may be positioned by the alternate flap switches.
2—That set of flaps must not be raised or lowered by any means.
3—Pull the flap position indicator circuit breaker and continue with normal flap extension.
4—Place the alternate flap master switch to the ON position and continue normal flap extension with the flap lever.

8737. Which procedure is used to feed center tank fuel to No. 1 engine? (See Figure 24.)

1—Both No. 1 tank boost pumps off; left center tank boost pump on; No. 1 manifold valve closed; No. 1 reserve transfer valve open.
2—Both No. 1 tank boost pumps on; both center tank boost pumps on; No. 1 manifold valve closed; No. 1 reserve transfer valve closed.
3—One No. 1 tank boost pump on; one center tank boost pump on; No. 1 manifold valve open; No. 1 reserve transfer valve open.
4—One No. 1 tank boost pump on; both center tank boost pumps on; No. 1 manifold valve open; No. 1 reserve transfer valve closed.

8738. What is the normal fuel system configuration for takeoff? (See Figure 24.)

1—All main pumps on; No. 1 cross-feed open; others closed.
2—All main pumps on; No. 2 cross-feed open; others closed.
3—All aft pumps on; all cross-feeds open.
4—All boost pumps on; all cross-feeds closed.

8739. When should the No. 1 fuel cross-feed valve normally be open? (See Figure 24.)

1—Only when starting or cross-feeding.
2—For starting and for all normal operation when main tanks are supplying their respective engines.
3—Only when feeding all engines from the center tank.
4—When cross-feeding and when transferring fuel from the No. 1 reserve tank.

8740. The trailing edge flaps have been operated by the alternate method. What should be done with the switches?

1—Emergency flap master switch remains on; emergency flap switches off.
2—All emergency flap switches off to ensure that flaps remain in the selected position.
3—Turn off the emergency flap master switch and position the emergency flap switches to up.
4—Emergency flap master switch off; emergency flap switches in desired flap position.

8741. Which action should be taken to provide noseup trim in a jammed stabilizer situation?

1—Deactivate outboard spoilers and inboard flaps.
2—Deactivate outboard spoilers and extend inboard spoilers.
3—Manually trim elevators to noseup condition.
4—Deactivate inboard spoilers and extend outboard spoilers.

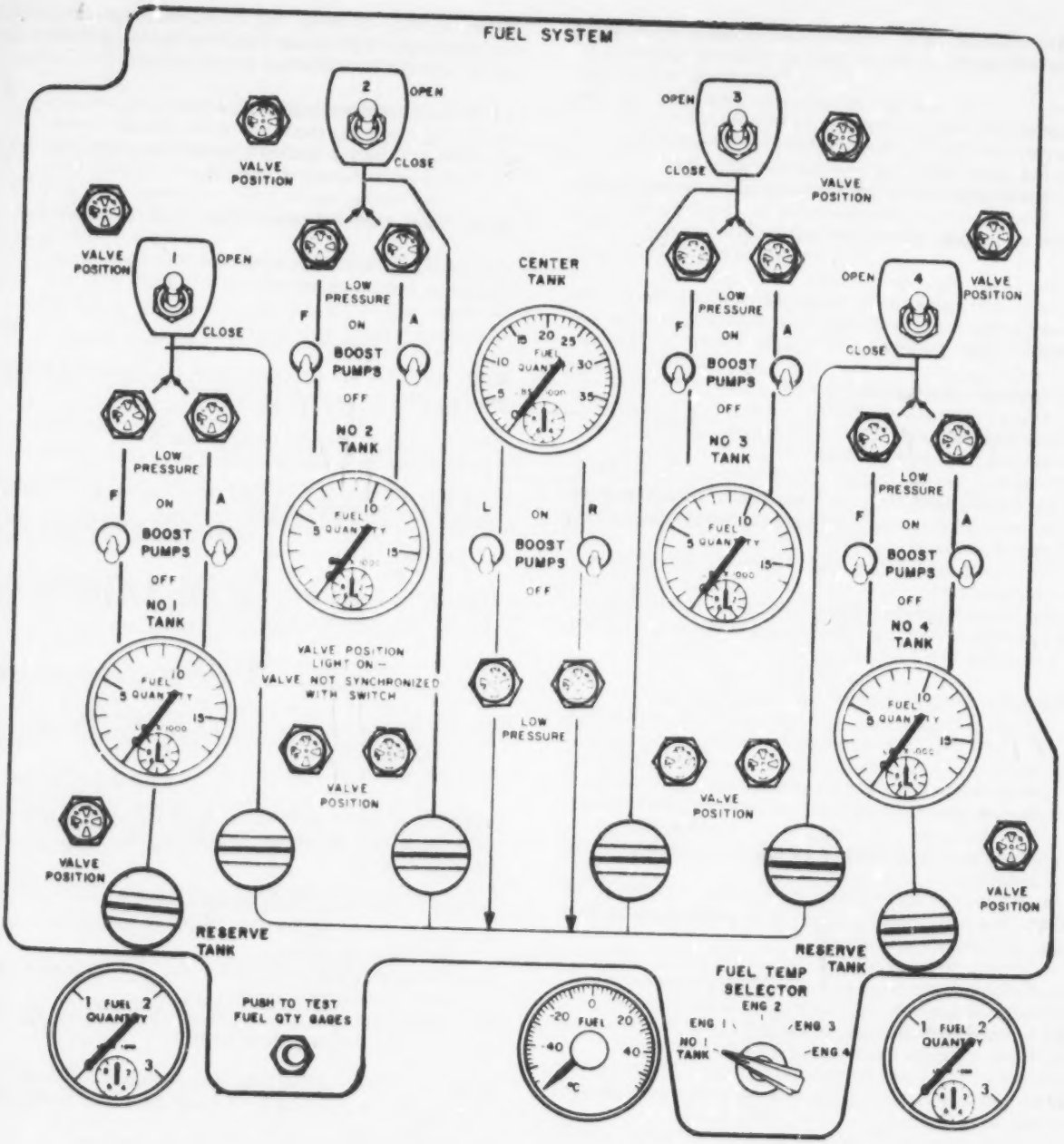
FUEL SYSTEM
VALVE POSITION
2
OPEN
CLOSE
VALVE POSITION
OPEN
3
CLOSE
VALVE POSITION
VALVE POSITION
1
OPEN
CLOSE
CENTER TANK
OPEN
4
CLOSE
VALVE POSITION
LOW PRESSURE
F
ON
A
BOOST PUMPS
OFF
NO 2 TANK
LOW PRESSURE
F
ON
A
BOOST PUMPS
OFF
NO 3 TANK
LOW PRESSURE
F
ON
A
BOOST PUMPS
OFF
NO 1 TANK
L
ON
R
BOOST PUMPS
OFF
LOW PRESSURE
NO 4 TANK
FUEL QUANTITY
VALVE POSITION LIGHT ON — VALVE NOT SYNCHRONIZED WITH SWITCH
VALVE POSITION
VALVE POSITION
VALVE POSITION
VALVE POSITION
RESERVE TANK
RESERVE TANK
1 FUEL 2 QUANTITY
PUSH TO TEST FUEL QTY GAGES
FUEL TEMP SELECTOR
ENG 2
ENG 1
ENG 3
NO 1 TANK
ENG 4
1 FUEL 2 QUANTITY

Figure 24

8742. How can an asymmetric flap condition be detected on the ground?

1—By a split needle indication on the flap position indicator.

2—The takeoff warning horn will always sound.
3—The affected set of flaps will automatically stop before the asymmetric condition becomes pronounced.
4—The flap lever will be immovable.

8743. Cross-feed procedures are used to equalize laterally unbalanced fuel loads. Which action should be used to stop the flow of fuel from a tank with a low fuel level?

1—Fore and aft boost pumps OFF.
2—Cross-feed valve CLOSED.
3—Tank valve CLOSED.
4—Engine fuel valve CLOSED.

8744. During takeoff, if flaps are not in takeoff position when throttles are advanced to takeoff range, the warning indication should be

1—a steady bell.
2—an intermittent horn.
3—a steady horn.
4—a red light in the flap handle.

8745. When will the electric trim operating light come on?

1—Anytime power is supplied to the main electric trim motor.
2—Anytime the stabilizer is being positioned.
3—Anytime power is supplied to either the main electric trim motor or the autopilot/Mach trim motor.
4—Anytime the stabilizer is being operated by the autopilot.

8746. If a loss of the auxiliary hydraulic system occurs, what spoilers are operative?

1—Outboard spoilers.
2—Inboard spoilers.
3—Inboard and outboard spoilers.
4—Inboard spoilers but limited to 20 .

8747. What should you do if a generator breaker light comes on in flight?

1—Check essential; open all bus tie breakers.
2—Check fault annunciator; check battery switch ON.
3—Check essential and reduce loads.
4—Open the bus tie breaker, then reclose the generator breaker.

8748. When an abnormal indication appears on the flight engineer's electrical control panel, what is the first action that should be taken?

1—Check the KVAR loads.
2—Ensure that essential a.c. is available.
3—Trip the bus tie breaker of the faulty generator.
4—Reduce the electrical load.

8749. During cruising flight, T/R-2 indicates zero amperage and 28V, while T/R-3 indicates relatively high amperage and 28V. What trouble is probable?

1—T/R-2 is not producing d.c. power.
2—T/R-2 current is feeding a faulty T/R-3.
3—T/R-3 current is feeding a faulty T/R-2 rectifier.
4—T/R-2 ammeter circuit is faulty.

8750. What is the indication when a T/R is inoperative?

1—Amps negative; volts zero.
2—Amps zero; volts zero.
3—Amps zero; volts normal.
4—Amber warning light comes on.

8751. Under which condition does the frequency control have an effect on generator output?

1—When the synchronizing lights are out.
2—When the generator is isolated from the sync bus.
3—When adjusting frequency of the APU generator or external power generator.
4—When two or more generators are operating in parallel.

8752. What action should be taken if a malfunctioning CSD will not disconnect?

1—Operate the engine at idle RPM.
2—Trip the associated field relay and generator breaker and continue engine operation.
3—Trip the associated bus tie breaker and continue engine operation.
4—Shut down the engine.

8753. What action is required if the CSD low oil pressure light and the generator breaker open light for one generator are on?

1—Attempt to close the generator breaker.
2—Open the bus tie breaker, close the generator breaker, and manually parallel.
3—Disconnect the CSD, check for zero frequency, and open the bus tie breaker.
4—Disconnect the CSD, confirm the disconnect, and open the generator field switch.

8754. If it is necessary to manually parallel the generators, how should the second generator be added to the common bus?

1—Close the generator breaker when both sync lights are out.
2—Close the bus tie when both sync lights are out.
3—Close the bus tie when both sync lights are on.
4—Close the generator breaker when sync lights are flashing alternately.

8755. Which switch should be opened if one KW/KVAR meter indicates zero or negative during flight operations?

1—Generator field.
2—Bus tie breaker.
3—Generator breaker.
4—External power.

8756. What steps should be taken to close a bus tie breaker that has tripped during paralleled operation when power is on both the sync bus and the load bus?

1—Trip the generator field relay prior to closing the bus tie breaker.
2—Check the generator frequency and, if it is within the auto-parallel range, close the bus tie breaker.
3—Trip the generator field relay, close the bus tie breaker, close the generator field relay, and then the generator breaker.
4—Adjust generator frequency for minimum sync flash rate, and close the bus tie breaker while both lights are out.

8757. Which type fault will trip a generator breaker?

1—Short or ground on the sync bus.
2—Loss of essential d.c. power.
3—CSD overspeed.
4—Illumination of CSD low oil pressure light.

8758. A generator fault has caused the opening of the bus tie breaker, generator breaker, and field relay. What action should be taken first?

1—Reclose the bus tie breaker.
2—Disconnect the generator.
3—Reclose the generator breaker if frequency is within limits.
4—Trip the other three bus tie breakers.

8759. When electrical power is changed to the ground power unit, which of the following will be tripped?

1—Bus tie breakers.
2—Generator breakers.
3—Generator field relays.
4—Generator drive disconnects.

8760. What electrical load should be reduced first for taxi to the ramp after landing?

1—Electric motor-driven hydraulic pumps.
2—Left pack switch.
3—All fuel booster pumps.
4—Galley power switch.

8761. Which condition is indicated when both a.c. generator synchronizing lights are on?

1—The selected generator is in phase with the synchronous bus.
2—The selected generator is out of phase with the synchronous bus.
3—The selected generator frequency is not the same as the synchronous bus.
4—The selected generator frequency is the same as the synchronous bus.

8762. Which electrical switch should be actuated to place a generator on the sync bus for automatic paralleling and for manual paralleling?

1—Bus tie for automatic; generator breaker for manual.
2—Generator breaker for automatic; bus tie for manual.
3—Bus tie for either automatic or manual.
4—Generator breaker for either automatic or manual.

8763. Which components require use of the a.c. meters selector for valid operation?

1—Synchronizing lights, a.c. voltmeter, and essential power selector.
2—KW - KVAR meter, APU ammeter, and frequency meter.
3—Frequency meter, a.c. voltmeter, and synchronizing lights.
4—Frequency meter, a.c. voltmeter, and APU ammeter.

8764. With a generator's speed normal, what other condition(s) must be met for the generator to supply essential power when selected?

1—Both the generator field relay and the generator breaker closed.
2—Only the generator field relay closed.
3—Both the generator breaker and the bus tie breaker closed.
4—Only the generator breaker closed.

8765. What is a purpose of the generator field switch?

1—Deactivate the generator when tripped.
2—Connect the generator bus to the sync bus.
3—Connect the generator to its bus, if the generator is up to speed.
4—Supply the generator field with residual voltage.

8766. Which controls on the flight engineer panel have an effect on the CSD?

1—Field switch, generator drive disconnect switch, and residual volts switch.
2—CSD disconnect, frequency control, and KVAR switch.
3—Field switch, KVAR switch, and frequency meter selector.
4—Frequency control and generator drive disconnect switch.

8767. The opening of which of these units would not remove a particular generator's power from its normal bus?

1—Field relay.
2—Bus tie breaker.
3—Generator breaker.
4—CSD disconnect switch.

8768. Making corrections for unbalanced KW loads of paralleled generators is a function of the

1—frequency control knob.
2—voltage regulation system.
3—constant-speed drive system.
4—synchronizing bus system.

8769. What should be done if a generator frequency reads high immediately after engine start?

1—Reduce electrical load or decrease N_2.
2—Shut down the engine and have oil added to the CSD tank.
3—Allow time for the CSD oil to warm up before taking any action.
4—Close the bus tie breaker and equalize the load.

8770. Which factors determine CSD oil temperature in cruising flight?

1—Generator load, airspeed, and ambient temperature.
2—Voltage, frequency, and engine oil temperature.
3—Electrical power consumption only.
4—Engine oil temperature and airspeed.

8771. What happens when the CSD switch is placed in the disconnect position?

1—The generator is disconnected from the CSD.
2—The generator drive shaft is sheared.
3—The CSD is disconnected from the engine.
4—The CSD shaft is sheared.

8772. What is the maximum continuous kilowatt load per generator?

1—30 KW.
2—36 KW.
3—40 KW.
4—46 KW.

8773. During an engine start, which is the first normal indication of generator rotation?

1—Frequency meter indication more than minimum scale.
2—Generator drive oil temperature gauge in yellow range.
3—CSD oil pressure light out.
4—KW or KVAR meter indication more than minimum scale.

8774. Which d.c. amperage may be indicated on the flight engineer's panel when selected by the d.c. meters rotary switch?

A. Battery input
B. Battery output
C. T/R input
D. T/R output
E. Static inverter output

1—A, B, C, D, and E.
2—B, C, and E only.
3—A, B, and D only.
4—A and D only.

8775. What is a function of the transformer rectifier?

1—To charge the battery.
2—To rectify 115V a.c. to 24V d.c.
3—To transform 28V d.c. to three-phase 115/120V a.c.
4—To convert 115V a.c. to 28V d.c.

8776. What are permissible voltage tolerances when checking T/R units?

1—22.0V to 24.0V.
2—24.9V to 32.5V.
3—25.5V to 28.5V.
4—115V to 120V.

8777. What is the function of the bus tie breaker?

1—To connect the generator to a common bus.
2—To control the RPM of the CSD output.
3—To disengage the generator from its drive mechanism in case of electrical emergencies.
4—To disconnect the generator from its bus when ground power is being utilized.

8778. What condition is indicated when the d.c. ammeter shows plus 25 amps with the selector in battery position?

1—The battery is being charged.
2—The battery is being discharged.
3—The essential a.c. bus is unpowered.
4—The battery switch is OFF.

8779. What will trip a field relay?

1—CSD underspeed or overspeed.
2—Closing the APU generator breaker.
3—Short or ground on the sync bus.
4—Pulling the engine fire switch.

8780. Before two a.c. generators may feed a single bus in parallel operation, they should be performing with approximately equal

1—field current, generator speed, and phase angle.
2—voltage, amperage, and engine speed.
3—frequency, engine speed, and voltage.
4—voltage, generator speed, and phase angle.

8781. Which is an indication that the battery is being charged?

1—Positive reading on the ammeter with the selector on T/R 1.
2—Positive reading on the ammeter with the selector on BATT.
3—Negative reading on the ammeter with the selector on BATT.
4—Negative reading on the ammeter with the selector on T/R 1.

8782. What action is required to obtain residual voltage?

1—Trip the generator breaker and press the residual volts switch.
2—Position the a.c. meters selector, trip the field switch, and press the residual volts switch.
3—Position the essential power selector, and trip the generator field relay.
4—Press the residual volts switch and monitor the KW/KVAR meter.

8783. Which is an indication that the yaw damper is functioning to control dutch roll?

1—Automatic movement of the rudder pedals.
2—Absence of yaw damper warning flags.
3—Momentary deflection of the rudder position indicator.
4—Automatic movement of the control wheel to counteract roll.

8784. What is indicated by a deflection of the elevator position indicators in level flight?

1—Hydraulic pressure available to the elevator power control or actuator.
2—Noseup or nosedown trim setting of the stabilizer.
3—Amount of force the autopilot servos are applying to maintain attitude.
4—Degree of elevator tab movement.

8785. What would be the cockpit indication if a cabin turbocompresso: should overspeed?

1—Tachometer zero, overspeed warning light ON and then OUT, low-pressure light ON.
2—Tachometer 100 percent, and overspeed warning light ON.
3—Tachometer below 20 percent, overspeed trip and low oil pressure lights ON.
4—Tachometer going off scale high, and overspeed warning light ON.

8786. How should the landing gear doors be opened for preflight inspection?

1—Place the gear door ground release handles in OPEN position.
2—Turn manual extension handcrank three turns clockwise.
3—Place landing gear lever off to free-fall doors.
4—Mechanically disconnect the door operation mechanism.

8787. How can the rate of smoke removal be increased during pressurized flight?

1—Increase the cabin altitude.
2—Increase the cabin differential pressure.
3—Close the cabin sidewall vents.
4—Open the wing anti-ice valves.

8788. In the event of cabin decompression, the flight engineer should visually check to see that the passenger oxygen masks dropped when the cabin altitude reached approximately

1—8,000 ft.
2—10,000 ft.
3—12,000 ft.
4—14,000 ft.

8789. Which of the following turbocompressor trips cannot be reset in flight?

1—Turbocompressor underspeed.
2—Turbocompressor overpressure.
3—Turbocompressor underpressure.
4—Turbocompressor overspeed.

8790. How should the pressurization controls be set for landing?

1—Flight altitude – sea level.
2—Cabin altitude – airport elevation.
3—Differential pressure –.125 PSI.
4—Cabin rate – 500 ft./min.

8791. What method is normally used to prevent pressurization pressure bumps during takeoff?

1—Set cabin rate control to FULL DECREASE.
2—Prepressurize the aircraft approximately one-eighth PSI.
3—Set cabin altitude selector 2,000 ft. above planned flight altitude.
4—Set 29.92 in the barometric scale and the cabin altitude pointer to 8.6 PSI differential.

8792. What is the maximum cabin differential pressure during takeoffs and landings?

1—0.125 PSI.
2—0.36 PSI.
3—1.25 PSI.
4—2.0 PSI.

8793. Which is the normal in-flight source of hot air in the freon air-conditioning system?

1—Turbocompressor discharge air.
2—Engine turbine section air.
3—Engine fan air.
4—Electric heat exchanger.

8794. What precaution should be observed when using the cabin temperature selector in the manual range?

1—Monitor cabin inlet duct temperature.
2—Pull the cabin heater circuit breakers when desired temperature is reached.
3—Monitor cabin ambient temperature.
4—Monitor cabin differential pressure.

8795. What is the purpose of a pack valve?

1—To regulate the degree of cooling produced by the freon pack.
2—To permit recirculated air to enter the air distribution system.
3—To permit turbocompressor air to pass through the heat exchangers into the cabin.
4—To mix hot and cold air prior to distribution in the cabin.

8796. How can positive control of the outflow valves be maintained (pneumatic controller)?

1—Set 29.92 on the barometric control prior to reaching cruise flight altitude.
2—Set 8.6 PSI differential in the cabin altitude selector.
3—Set the cabin rate of change selector to full increase after climb power is established.
4—Set approximately 2,000 ft. above flight altitude in the pressurization controller.

8797. The function of the cabin negative pressure relief valve is to

1—prevent exceeding .125 PSI differential pressure when on the ground.
2—prevent atmospheric pressure exceeding cabin pressure.
3—prevent a pressure differential between the main cabin and the lower cargo compartments.
4—prevent landing with a positive cabin pressure.

8798. During preflight with all a.c. power off, what is the minimum allowable battery voltage?

1—20V.
2—22V.
3—24V.
4—26V.

8799. What is the function of a turbocompressor?

1—Use engine or ground cart air to compress outside air for air-conditioning and pressurization.
2—Use engine bleed air to compress outside air for pressurization and heating.
3—Use engine turbine air to compress cabin air for high-altitude operation.
4—Compress outside air and permit expansion through a turbine to create a temperature drop.

8800. Which is appropriate if several vortex generators are observed to be missing from the aircraft?

1—Have maintenance replace all missing generators prior to flight.
2—Check the Minimum Equipment List for applicable flight restrictions.
3—50 percent of the generators are allowed to be missing.
4—Flight is permitted if an equal number of generators are missing on each side of the aircraft.

8801. What is the approximate duration of the passenge oxygen system under these conditions? (See Figure 25.)

Cabin altitude ..... 20,000 ft
Passengers 16
Bottle pressure ..... 1,500 PSIG

1—19 minutes.
2—21 minutes.
3—27 minutes.
4—30 minutes.

8802. What is the approximate duration of the passenger oxygen system under these conditions? (See Figure 25.)

Cabin altitude ..... 20,000 ft.
Passengers 110
Bottle pressure ..... 1,250 PSIG

1—29 minutes.
2—32 minutes.
3—37 minutes.
4—41 minutes.

8803. What is the approximate duration of the passenger oxygen system under these conditions? (See Figure 25.)

Cabin altitude ..... 25,000 ft.
Passengers 110
Bottle pressure ..... 1,300 PSIG

1—18 minutes.
2—20 minutes.
3—22 minutes.
4—24 minutes.

The table below gives the approximate duration of the cabin oxygen system, based on a cylinder pressure of 1500 psi.

CABIN ALTITUDE	NUMBER OF PASSENGERS	*APPROX. DURATION
15,000	50	2 hrs. 29 mins.
	75	1 hr. 39 mins.
	110	1 hr. 12 mins.
	140	1 hr. 2 mins.
	170	53 mins.
20,000	50	1 hr. 17 mins.
	75	51 mins.
	110	37 mins.
	140	32 mins.
	170	27 mins.
25,000	50	50 mins.
	75	33 mins.
	110	24 mins.
	140	20 mins.
	170	18 mins.

*For cylinder pressures less than 1500 psi, reduce duration by 8% for each 100 psi.

Figure 25

8804. On preflight inspection, the brake lockout debooster should be checked to assure that the

1—pneumatic brake pressure is at least 1,000 PSI.
2—brake is applied and the lockout indicator is in the red band.
3—brake is not applied and pressure is reduced.
4—indicator shows adequate fluid between the lockout and the brake.

8805. Which precaution should be observed when performing the preliminary cockpit preflight?

1—Do not perform the pitot-static heat system check while the aircraft is stationary.
2—Obtain ground clearance before applying electrical power to the aircraft.
3—Obtain ground clearance before actuating a hydraulic pump.
4—Do not perform the engine fire warning system check while using APU power.

8806. What item should be checked at the main gear assembly during preflight?

1—Brake wear indicators.
2—Lockout cylinder air pressure preload.
3—Shock strut hydraulic fluid level.
4—Pneumatic brake pressure.

8807. What is a feature of the passenger oxygen system?

1—The masks drop and oxygen automatically flows through the masks anytime cabin altitude exceeds 10,000 ft.
2—The green overboard discharge disc will be missing if the system has been used.
3—The system must be shut off and reset manually, regardless of the method of actuation.
4—The system cannot be actuated unless aircraft altitude exceeds 14,000 ft.

8808. Which is a feature of the passenger oxygen deployment system?

1—The oxygen masks will automatically drop at 10,000 ft. cabin altitude.
2—When masks are deployed automatically, an intermittent horn is energized in the cockpit.
3—The masks supply oxygen only when the user inhales.
4—The automatic system is bypassed by actuating a switch on the flight deck.

8809. The oxygen supply valve at a passenger unit

1—will open at 14,000 ft. cabin altitude.
2—is opened when the mask is pulled to the passenger's face.
3—is opened by actuating a switch on the pilot's overhead panel.
4—must be opened and closed by a flight attendant.

8810. During the preflight check of the oxygen mask and regulator, what is an indication of proper operation with the regulator in 100 percent and the supply lever off?

1—No air or oxygen available.
2—Oxygen flow should be indicated while inhaling.
3—Ambient air is admitted through the regulator.
4—No oxygen flow, but filtered cockpit air is admitted through the regulator.

8811. During preflight inspection, the oxygen controls are placed in normal with the supply lever off. What is an indication of proper operation when the oxygen mask is being checked?

1—No air or oxygen is available.
2—Oxygen is available upon inhalation.
3—Flight deck air is admitted through the regulator, but no oxygen.
4—Cabin air is admitted through the relief valve in the mask.

8812. Which selection of an oxygen control lever is used to prevent entrance of flight deck air into the crew oxygen regulator?

1—Supply lever, on.
2—Emergency lever, normal.
3—Supply lever, off.
4—Diluter lever, 100 percent.

8813. What does the crew oxygen pressure gauge indicate?

1—Bottle pressure regardless of valve position.
2—Oxygen pressure between the individual regulator and the full-face mask.
3—Oxygen pressure in the line between the oxygen bottle and the regulator.
4—Bottle pressure only if the valve is closed.

8814. With the supply lever on, what condition of oxygen flow should exist when the selector on the regulator is placed in emergency?

1—Continuous flow of diluted oxygen under positive pressure.
2—Continuous flow of 100 percent oxygen under positive pressure.
3—100 percent oxygen available on demand.
4—Diluted oxygen available on demand.

8815. What is indicated when the oxygen system amber light is ON?

1—The crew system has been depleted.
2—The passenger oxygen masks are being used.
3—The passenger system has been pressurized.
4—The interconnect valve between crew and passenger systems is open.

8816. Determine the takeoff stabilizer trim setting within the nearest 1/4 unit. (See Figure 26.)

Takeoff weight.....265,000 lb.
Takeoff total moment index.....22296.2
Reduction factor.....10,000
MAC.....272.3
LEMAC.....Sta. 763.0

1—2-1/4 units noseup.
2—2-3/4 units noseup.
3—2 units noseup.
4—2-1/2 units noseup.

8817. Determine the takeoff stabilizer trim setting within the nearest 1/4 unit. (See Figure 26.)

Takeoff weight.....280,000 lb.
Takeoff total moment index.....23293.1
Reduction factor.....10,000
MAC.....272.3
LEMAC.....Sta. 763.0

1—3-3/4 units noseup.
2—4 units noseup.
3—3-1/2 units noseup.
4—3-1/4 units noseup.

8818. What is the maximum payload under these conditions?

Basic operating weight.....150,000 lb.
Max. zero fuel weight.....230,000 lb.
Max. landing weight.....245,000 lb.
Max. takeoff weight.....320,000 lb.
Fuel tank load.....94,500 lb.
Est. fuel burn en route.....71,500 lb.

1—72,000 lb.
2—75,000 lb.
3—80,000 lb.
4—84,000 lb.

8819. What is the maximum payload under these conditions?

Basic operating weight.....150,000 lb.
Max. zero fuel weight.....230,000 lb.
Max. landing weight.....265,000 lb.
Max. takeoff weight.....340,000 lb.
Fuel tank load.....102,000 lb.
Est. fuel burn en route.....75,500 lb.

1—75,500 lb.
2—80,000 lb.
3—84,000 lb.
4—88,500 lb.

8820. The gross weight of the aircraft is 328,000 lb. How much weight must be moved from station 1020.0 to station 400.0 to move the CG forward 1.3 inches?

1—597 lb.
2—688 lb.
3—834 lb.
4—1,270 lb.

8821. The gross weight of the aircraft is 285,000 lb. How much weight must be moved from station 1030.0 to station 600.0 to move the CG forward 2.3 inches?

1—1,270 lb.
2—1,475 lb.
3—1,525 lb.
4—1,765 lb.

8822. An aircraft is ready for takeoff with these loading conditions:

Takeoff weight.....300,000 lb.
CG.....25.8% MAC
MAC.....763.0" — 1035.3"
Compartment locations:
Fwd.....500"
Aft.....1010"

Before takeoff, 6,500 lb. of cargo is shifted from the forward to the aft compartment. What is the new CG location?

1—26.9 percent of MAC.
2—27.8 percent of MAC.
3—29.2 percent of MAC.
4—30.1 percent of MAC.

8823. An aircraft is ready for takeoff with these loading conditions:

Takeoff weight.....270,000 lb.
CG.....32.7% MAC
MAC.....763.0" — 1035.3"
Compartment locations:
Fwd.....500"
Aft.....1010"

Before takeoff, 6,500 lb. of cargo is shifted from the aft to the forward compartment. What is the new CG location?

1—28.2 percent of MAC.
2—29.6 percent of MAC.
3—30.4 percent of MAC.
4—31.5 percent of MAC.

CG % MAC	16	18	20	22	24	26	28	30	32	34	35
Units Nose Up	6-1/2	6	5-1/4	4-1/2	4	3-1/4	2-1/2	2	1-1/4	1/2	0

Figure 26

8824. An aircraft is ready for takeoff with these loading conditions:

Takeoff weight.....250,000 lb.
CG.....20.7% MAC
MAC.....763.0″ — 1035.3″
Compartment locations:
Fwd.....500″
Aft.....1010″

Before takeoff, 3,250 lb. of cargo is shifted from the forward to the aft compartment. What is the new CG location?

1—22.5 percent of MAC
2—23.1 percent of MAC.
3—23.9 percent of MAC.
4—24.7 percent of MAC.

8825. Before a cargo change is made, the following is known about an airplane:

Aircraft weight.....250,000 lb.
CG position.....30.5% MAC
Length of MAC.....Sta. 763.0 to 1035.3

If 5,000 lb. of cargo is removed from an average location of station 1010.0, what is the new CG position relative to MAC?

1—27.5 percent.
2—28.4 percent.
3—29.3 percent.
4—31.7 percent.

8826. Before a cargo change is made the following is known about an airplane:

Aircraft weight.....300,000 lb.
CG position.....24.5% MAC
Length of MAC.....Sta. 763 0 to 1035.3

If 5,000 lb. of cargo is removed from an average location of station 1170.0, what is the new CG position relative to MAC?

1—21.7 percent.
2—22.4 percent.
3—24.3 percent.
4—26.6 percent.

8827. An airplane has been cruising for 2.5 hours at a speed of Mach .82. Total fuel consumed during this period has been 26,900 lb. If Mach 1.0 is 574 knots, what has been the nautical air miles/1,000 lb. of fuel?

1—38.1 NAM/1,000 lb.
2—40.0 NAM/1,000 lb.
3—43.7 NAM/1,000 lb.
4—46.4 NAM/1,000 lb.

8828. An airplane has been cruising for 2 hours 40 minutes at a speed of Mach .84. Total fuel consumed during this period has been 34,000 lb. If Mach 1.0 is 590 knots, what has been the nautical air miles/1,000 lb. of fuel?

1—38.1 NAM/1,000 lb.
2—38.9 NAM/1,000 lb.
3—40.0 NAM/1,000 lb.
4—42.5 NAM/1,000 lb.

8829. After the shutdown of one engine, how many minutes of dump time would be required to reach maximum landing weight at the touchdown?

Cruise weight.....311,000 lb.
Max. landing weight.....240,000 lb.
Average fuel flow during dumping and descent to touchdown.....3,300 lb./hr./eng.
Time from start dump to landing.....16 min.
Fuel dump rate.....5,000 lb./min.

1—11.7 minutes.
2—12.3 minutes.
3—13.7 minutes.
4—14.2 minutes.

8830. After the shutdown of one engine, how many minutes of dump time would be required to reach maximum landing weight at the touchdown?

Cruise weight.....302,000 lb.
Max. landing weight.....240,000 lb.
Average fuel flow during dumping and descent to touchdown.....3,300 lb./hr./eng.
Time from start dump to landing.....19 min.
Fuel dump rate.....4,500 lb./min.

1—11.6 minutes.
2—12.3 minutes.
3—13.1 minutes.
4—13.8 minutes.

8831. How can the possible fire area be located if the fire bell rings but no warning light illuminates?

1—Check the engine gauges for an abnormally high oil temperature.
2—Actuate the fire test switch; a defective warning light indicates the possible fire.
3—Press to test each warning light; an inoperative light indicates the possible fire.
4—Pull the fire handles one at a time; when the bell is silenced, the fire has been located.

8832. With an in-flight engine fire, when should the second fire-extinguisher bottle be discharged?

1—30 seconds after the first one, if the fire warning light is still on.
2—15 seconds after the first one, if the fire warning bell rings again.
3—Immediately following the first one to ensure complete smother and cooling.
4—At least 1 minute after the first one, if the fire warning light is still on.

8833. What fire detection means, if any, is provided for the lower cargo compartment?

1—No equipment is installed to detect a class D compartment fire.
2—The fire bell rings, but no warning light illuminates.
3—Flames can be observed through the viewing ports in the cabin floor.
4—Smoke detector tubes on the flight engineer's panel.

8834. If an engine fire has occurred in flight, what happens when the master fire light cover is pressed?

1—The bell is silenced and the fire shutoff handle lights are extinguished.
2—The bell circuit is rearmed and the agent discharged handle lights are extinguished.
3—The bell sound volume is reduced and all fire lights are extinguished.
4—The bell is silenced, the master lights are extinguished, and the system is rearmed.

8835. How should the flight controls be positioned to facilitate passenger evacuation through the overwing exits?

1—Speed brake lever up.
2—Flaps full down.
3—Flaps halfway down (24°).
4—Speed brake lever halfway up (20°).

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8836. What source provides power to operate the emergency exit lights?

1—The aircraft battery.
2—The essential a.c. bus.
3—Batteries contained in each light.
4—Dry-cell battery packs located in each raft.

8837. Which type portable fire extinguisher is most desirable for use on galley fires?

1—Carbon dioxide.
2—Water with antifreeze agent.
3—Dry chemical.
4—Freon.

8838. When an engine is shut down by pulling the fire handle, for reasons other than fire, and the engine is windmilling above 25 percent N_2, why should the fire handle be returned to normal position periodically?

1—To prevent engine bearing overheat and possible seizure.
2—To prevent heat buildup in the engine fuel system.
3—To open the pneumatic shutoff valve for bleed of internal engine pressure.
4—To prevent heat buildup in the hydraulic pumps.

8839. What action, if any, should be taken if engine oil pressure drops below 35 PSI during cruise?

1—Place the engine throttle in idle position.
2—Shut down the engine.
3—Continue operation if oil pressure stays above 30 PSI.
4—Reduce thrust and continue use of the engine until the first landing.

8840. One cockpit indication of the starter valve closing after engine start would be

1—the start valve open light out, with no change in manifold pressure.
2—an increase in manifold pressure.
3—a decrease in starter RPM.
4—an increase in engine RPM, EGT, and fuel flow.

8841. Which step activates ignition during a normal start procedure on the ground?

1—Moving the start lever out of cutoff position.
2—Closing the starter switch.
3—N_2 RPM reaching 10 percent.
4—Placing the ignition switch in the GROUND position.

8842. Which is a precaution regarding the use of in-flight thrust braking?

1—Wing flaps must be completely retracted.
2—Do not use below 250 knots IAS.
3—The maximum speed should not exceed 300 knots IAS.
4—Only use engines Nos. 1 and 4 for in-flight thrust braking.

8843. Which switch or control position is always required to activate the engine ignition system?

1—Starter switch in flight or ground.
2—Continuous ignition switch on.
3—Start lever out of CUTOFF position.
4—Forward thrust lever in IDLE position.

8844. In order to complete the electrical circuit to the engine starting switches (buttons), which of the following switches must be off?

1—Freon compressors and cabin compressors.
2—Galley power and recirculating fans.
3—Freon compressors and recirculating fans.
4—Cabin compressors and galley power.

8845. What trouble is indicated and what action should be taken if the fuel pressure on No. 2 engine reads 0 to -5 PSI while in cruise flight?

1—The tank boost pump has failed and the circuit breaker should be pulled out.
2—The second stage of the engine-driven pump has failed and all controls should be placed in proper position for a windmilling engine.
3—The engine-driven boost pump has failed and the tank boost pump should be turned on.
4—The first stage of the engine-driven pump has failed and the engine should be shut down.

8846. Determine the takeoff speeds for these conditions. (See Figure 27.)

Gross weight.....250,000 lb.
Pressure altitude.....428 ft.
OAT.....80° F
Flaps.....25°
Tailwind.....5 knots
Airport.....SEA R/W 34

1—V_1, 118; V_R, 132; V_2, 145.
2—V_1, 117; V_R, 133; V_2, 144.
3—V_1, 116; V_R, 131; V_2, 143.
4—V_1, 120; V_R, 154; V_2, 165.

8847. Determine the takeoff speeds for these conditions. (See Figure 27.)

Gross weight.....310,000 lb.
Pressure altitude.....428 ft.
OAT.....96° F
Flaps.....15°
Headwind.....15 knots
Airport.....SEA R/W 16

1—V_1, 139; V_R, 157; V_2, 166.
2—V_1, 145; V_R, 157; V_2, 165.
3—V_1, 143; V_R, 155; V_2, 166.
4—V_1, 141; V_R, 156; V_2, 165.

TAKEOFF SPEEDS

ALT. – 1000 FT.	AMBIENT TEMPERATURE – °F				
6 to 7	– – –	– – –	–20 to 5	5 to 25	25 to 85
5 to 6	– – –	–20 to 5	5 to 25	25 to 45	45 to 95
4 to 5	–20 to – 5	– 5 to 25	25 to 45	45 to 85	85 to 105
3 to 4	–20 to 15	15 to 35	35 to 55	55 to 95	95 to 105
2 to 3	–20 to 35	35 to 55	55 to 85	85 to 105	105 to 120
1 to 2	–20 to 55	55 to 85	85 to 95	95 to 120	– – –
0 to 1	–20 to 85	85 to 95	95 to 105	105 to 120	– – –

FLAP POS	WEIGHT – 1000 LBS.														
		V_1	V_R	V_2	V_1	V_R	V_2	V_1	V_R	V_2	V_1	V_R	V_2	V_1	V_R	V_2
25	325	140	154	162	141	154	161	142	154	161	144	155	161			
	320	138	153	160	139	153	160	141	153	160	143	154	160	145	154	160
	300	132	147	156	133	147	155	134	147	155	136	148	155	138	149	154
	280 V BASIC	126	141	151	127	142	151	128	142	151	130	142	150	131	143	150
	260	119	135	147	120	136	146	121	136	146	123	137	145	124	138	145
	240	112	128	142	113	129	141	114	129	141	116	130	140	117	131	140
	220	106	122	135	107	123	136	108	124	136	109	124	135	110	125	134
	200	99	120	136	100	118	133	100	115	130	102	117	130	103	118	129
	180	108	120	138	104	118	134	102	114	130	98	110	126	95	111	124
	V_1 Limit	108	–	–	104	–	–	102	–	–	99	–	–	–	–	–
15	325	143	159	169	144	160	169	145	161	169	144	160	169			
	320	142	157	168	142	158	168	144	160	168	146	159	168	143	161	167
	300 V BASIC	135	151	163	136	152	163	137	153	163	139	152	163	142	155	162
	280	129	145	158	129	146	158	131	147	158	132	146	157	135	149	157
	260	122	139	153	123	140	153	124	141	153	125	140	153	128	142	152
	240	115	132	148	116	133	148	117	134	148	118	134	147	121	136	146
	220	109	125	143	109	126	143	110	127	143	111	127	142	113	129	140
	200	108	120	140	102	119	137	103	120	137	104	119	136	106	122	135
	180	108	120	143	104	118	139	95	116	134	96	113	131	98	114	129
	V_1 Limit	108	–	–	104	–	–	102	–	–	99	–	–	–	–	–

Compare adjusted V_1 Basic speed with V_1 Limit speed and use the higher speed.

ADJUSTMENTS:

1. Headwind: For each 15 knots, increase V_1 Basic 1 knot.
2. Tailwind: For each 5 knots, decrease V_1 Basic 1 knot.
3. Airports BOS R/W 17, TAS R/W 1 & 7, SEA R/W 16, decrease V_1 Basic 3 knots.
4. Airports BOS R/W 35, TAS R/W 19 & 25, SEA R/W 34, increase V_1 Basic 3 knots.

Figure 27

8848. While in cruise flight, one circuit breaker for a tank-mounted boost pump tripped and cannot be reset. Which answer is correct for this condition?

1—The output of the pump will be satisfactory for normal requirements.
2—The d.c. circuit breaker should be pulled to prevent the control relay from overheating.
3—The pump motor will fail unless the remaining breakers are pulled immediately.
4—The pump will be inoperative.

8849. How are ice particles in the fuel kept from forming in the fuel strainer and fuel control passages?

1—By the fuel temperature regulator using N_1 compressor air as a heat source.
2—By fuel temperature regulators using engine scavenge oil as a heat source.
3—By the fuel temperature regulator using N_2 compressor air as a heat source.
4—By fuel tank heaters maintaining fuel temperature above –40° C.

8850. Which system would be operative prior to putting an a.c. generator on the line if an engine is started using the airplane battery?

1—Fire detection.
2—Manifold pressure.
3—Fuel flow.
4—Oil pressure.

8851. What would be a probable cause, if the manifold air pressure indicating light is on with the left and right air pressure indicator in normal range?

1—Faulty overpressure switch.
2—All relief valves failed – closed.
3—One relief valve failed – open.
4—Both under-pressure switches faulty.

8852. Which condition is indicated by illumination of the right manifold fail light?

1—High temperature in the right wing leading edge.
2—Ruptured or leaking pneumatic duct in the right wing.
3—Leak from the right pneumatic duct into its protective shroud.
4—Low pressure in the right pneumatic manifold.

8853. What action should be taken in event the engine ground cooling and blow-away jet shutoff valve fails to close after takeoff?

1—Maintain adequate electrical generator loads to assure minimum CSD oil temperature.
2—Adjust EPR to compensate for increased engine bleed.
3—Pull the related circuit breakers.
4—Recycle the nose gear to actuate the nose gear strut switch.

8854. When should the ground cooling and blow-away jet shutoff switches be placed in the OFF position?

1—After takeoff power is reduced to climb power.
2—Prior to final setting of takeoff EPR.
3—Prior to advancing throttles for takeoff.
4—After gear retraction or 200 ft. altitude.

8855. How can the manifold pressure decay check be accomplished?

1—With engines running, pressurize the manifold to 40 PSIG, place the engine anti-ice switch on, and observe a maximum of 8 PSI drop.
2—Pressurize the manifold and observe the time for the pressure to decay from 30 to 20 PSIG.
3—Depress and hold the left manifold failure warning light and observe the left light and the master warning light on.
4—With a ground pneumatic source, pressurize the left manifold and the right manifold individually, and observe approximately a 2 PSI increase in pressure as each engine anti-ice valve is placed in the OFF position.

8856. What is normal for operation of the pneumatic cross-feed valve?

1—Automatically opens in the air.
2—Automatically opens on the ground.
3—Should be opened in the air by placing the pneumatic cross-feed switch to normal.
4—Should be opened on the ground by placing the pneumatic cross-feed switch to override.

8857. Determine the normal takeoff EPR for these conditions. (See Figure 28.)

Pressure altitude	2,000 ft.
OAT	47° F
Assumed temperature	95° F
Cabin compressors	Two OFF
Rain removal	OFF

1—1.80.
2—1.81.
3—1.90.
4—1.91.

8858. Determine the normal takeoff EPR for these conditions. (See Figure 28.)

Pressure altitude	5,000 ft.
OAT	40° F
Assumed temperature	80° F
Cabin compressors	Two ON
Rain removal	ON

1—1.85.
2—1.86.
3—1.92.
4—1.93.

NORMAL TAKEOFF THRUST

1. Determine Max EPR from the Maximum Takeoff Thrust table.
2. Using Assumed Temperature and MAX EPR, determine Normal EPR.

EPR is valid when set at 40 - 80 knots, two cabin compressors are on, blowaway jets are off.

ASSUM TEMP °F	MAX EPR											
	1.86	1.87	1.89	1.90	1.91	1.93	1.95	1.96	1.97	1.99	2.00	2.01
	NORMAL EPR											
120	1.75	1.76	1.78	1.79	1.80	1.82	1.84	1.85	1.86	1.88	1.89	1.90
115	1.75	1.76	1.78	1.79	1.80	1.82	1.84	1.85	1.86	1.88	1.89	1.90
110	1.75	1.76	1.78	1.79	1.80	1.82	1.84	1.85	1.86	1.88	1.89	1.90
105	1.75	1.76	1.78	1.79	1.80	1.82	1.84	1.85	1.86	1.88	1.89	1.90
100	1.77	1.77	1.78	1.79	1.80	1.82	1.84	1.85	1.86	1.88	1.89	1.90
95	1.80	1.80	1.80	1.80	1.80	1.82	1.84	1.85	1.86	1.88	1.89	1.90
90	1.82	1.82	1.82	1.82	1.82	1.82	1.84	1.85	1.86	1.88	1.89	1.90
85	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.86	1.88	1.89	1.90
80	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.88	1.89	1.90
75	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.88	1.89	1.90
70	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.88	1.89	1.90
65	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.88	1.89	1.90
60	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.88	1.89	1.90
55	1.86	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.88	1.89	1.90
50	1.86	1.87	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.90
45	1.86	1.87	1.89	1.90	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91
40	1.86	1.87	1.89	1.90	1.91	1.93	1.93	1.93	1.93	1.93	1.93	1.93
35	1.86	1.87	1.89	1.90	1.91	1.93	1.95	1.95	1.95	1.95	1.95	1.95
30	1.86	1.87	1.89	1.90	1.91	1.93	1.95	1.96	1.96	1.96	1.96	1.96
25	1.86	1.87	1.89	1.90	1.91	1.93	1.95	1.96	1.97	1.97	1.97	1.97

ADJUSTMENTS:

1. All cabin compressors off, add .01.
2. Rain removal on, subtract .01.

MAXIMUM TAKEOFF THRUST

OAT °F	PRESSURE ALTITUDE (1,000 feet)					
	SL	1	2	3	4	Above 4
75	1.86	1.86	1.86	1.86	1.86	1.86
70	1.86	1.86	1.86	1.86	1.86	1.86
65	1.86	1.86	1.86	1.86	1.86	1.86
60	1.86	1.86	1.86	1.86	1.86	1.86
55	1.86	1.87	1.87	1.87	1.87	1.87
50	1.86	1.89	1.89	1.89	1.89	1.89
47	1.86	1.90	1.90	1.90	1.90	1.90
45	1.86	1.90	1.91	1.91	1.91	1.91
40	1.86	1.90	1.93	1.93	1.93	1.93
35	1.86	1.90	1.95	1.95	1.95	1.95
33	1.86	1.90	1.95	1.95	1.95	1.95
30	1.86	1.90	1.95	1.96	1.96	1.96
25	1.86	1.90	1.95	1.97	1.97	1.97
20	1.86	1.90	1.95	1.99	1.99	1.99
16	1.86	1.90	1.95	2.00	2.00	2.00
15	1.86	1.90	1.95	2.00	2.01	2.01
10	1.86	1.90	1.95	2.00	2.02	2.02
5	1.86	1.90	1.95	2.00	2.03	2.03
0	1.86	1.90	1.95	2.00	2.04	2.04
–5	1.86	1.90	1.95	2.00	2.05	2.05

Figure 28

8859. What is the purpose of the engine blow-away jet system?

1—Provides supplemental cooling air for the electrical and electronic equipment.
2—Provides high-velocity engine bleed air for generator ground cooling.
3—Helps prevent foreign objects from being pulled into the engine.
4—Helps prevent bird ingestion into the engines during takeoff and approach.

8860. What action should be taken if an engine is windmilling at 19.5 percent N_1 and 25.5 percent N_2 when operating at FL350 and 240 knots? (See Figure 29.)

1—The engine should not be started because the N_1 and N_2 RPM's are out of tolerance.
2—The engine should not be started because the N_2 RPM is out of tolerance.
3—The engine may be started under the existing conditions.
4—The engine may be started if the airspeed is reduced.

INFLIGHT ENGINE START ENVELOPE

IAS KNOTS		PRESSURE ALTITUDE 1000 FT								
		0	5	10	15	20	25	30	35	40
V_{MO}/M_{MO}	N_1%	18	20	22	23	25	26	26	26	27
	N_2%	27	29	32	34	37	37	35	34	33
400					23	25				
					34	36				
380		18	19	21	22	24	26			
		27	28	30	32	34	37			
360		17	18	20	21	23	25			
		25	27	28	30	32	34			
340		16	17	19	20	21	24	26		
		24	25	27	28	30	33	35		
320		15	16	18	19	20	22	25		
		22	23	25	27	28	31	33		
300		14	16	17	18	19	21	23	26	
		21	22	23	25	27	29	31	33	
280		13	15	16	17	18	20	22	24	
		19	20	22	23	25	27	29	31	
260		13	14	15	16	17	18	20	22	26
		18	19	20	21	23	25	26	29	31
240		12	13	14	15	16	17	18	20	23
		17	17	18	19	21	23	24	26	29
220		11	12	13	14	15	16	17	18	20
		15	16	17	18	19	21	22	24	26

NOMINAL WINDMILLING RPM
TOLERANCE ± 3%

Figure 29

8861. Which procedure can be used to start an engine with an inoperative start valve?

1—Cross-bleed from an operating engine.
2—Place engine start switch in FLIGHT position.
3—Ground crewman opens the valve manually.
4—Place start lever in IDLE before placing engine start switch in GROUND.

8862. What are indications of an impending hot start?

1—Turbine temperature above limits and high fuel flow.
2—EGT rising rapidly; low fuel flow; slow acceleration.
3—EGT rising slowly; low fuel flow; rapid acceleration.
4—EGT rising rapidly; high fuel flow; slow acceleration.

8863. In the event electrical power is lost to the engine anti-ice system, the anti-icing valves will

1—operate pneumatically if ice covers the impact tube.
2—go to the OPEN position.
3—go to the CLOSED position.
4—remain in the position last selected.

8864. When the landing gear is down and the wing deice valves are open, what will be the position of the deice valves if electrical power to the valves fails?

1—Open position.
2—Open, as long as pneumatic power is available.
3—Half-closed position; airflow reduced.
4—Closed position.

8865. Which temperature selection should be made on the airfoil deice timer?

1—Standard air temperature for the altitude.
2—True air temperature.
3—Ram air temperature.
4—Duct air temperature.

8866. If the right manifold fail light is on and, through tests, it is determined that the manifold has failed, which statement describes the resultant system's operating condition?

1—By closing the cross-feed valve, right wing deicing could be used.
2—The tail deice system would still be available.
3—Wing deicing would not be affected with the cross-feed valve open.
4—The right wing and tail deice systems would be inoperative.

8867. What happens in flight with airfoil deicing on when the landing gear is placed down?

1—Wing and tail deicing continues on the long cycle.
2—Tail deicing is shut off.
3—Wing slot deicing cycle is tripled.
4—Flap deicing valves are opened.

8868. To protect against engine flameout during engine icing conditions, which action should be taken?

1—Place ignition override switch in ALL ENGINES position.
2—Place start switches to GROUND START position.
3—Place start switches to FLIGHT START position.
4—Place ignition override switch to ANTI–ICE position.

8869. Which procedure is recommended if engine icing conditions are encountered during flight?

1—Place the ignition override switch in the ALL ENGINES position after actuation of the engine anti–icing system.
2—Place the ignition override switch in the ALL ENGINES position prior to actuation of the engine anti–icing system.
3—Place the ignition override switches on for each engine and leave on for a minimum of 3 minutes.
4—Place continuous ignition on for all engines prior to actuation of the engine anti–icing system.

8870. Which action removes anti–ice protection from the air–conditioning inlet scoops while the scoops switch is on?

1—Actuation of the ground shift mechanism on landing.
2—Placing the deicing timer in long cycle.
3—Placing the landing gear lever down.
4—Actuation of the rain removal system.

8871. In the event certain systems are found in the ON position during the engine prestart procedure, which may be closed without the aid of a.c. electrical power?

1—Scoops anti–ice.
2—Engine anti–ice.
3—Cabin compressors.
4—Windshield rain removal.

8872. Why should the windshield rain removal control levers be in the OFF position when the engines are not operating?

1—To prevent rain from entering the cockpit area.
2—To prevent rain from entering the cabin compressor turbine.
3—To eliminate the possibility of overheating a windshield when the engines are started.
4—To assure adequate manifold pressure for engine starting.

8873. One caution regarding the windshield rain removal system is, do not turn on

1—when the manifold pressure is above 25 PSIG.
2—while the bleed system is in high pressure.
3—while the liquid rain repellent system is in use.
4—when a ground pneumatic source is supplying air above 200° F.

8874. For what purposes are the windows in the flight compartment heated?

1—Deicing, defogging, and increased resistance to cabin pressures.
2—Anti–icing, bird proofing, and increased resistance to external dynamic air pressures.
3—Anti–icing, defogging, and bird proofing.
4—Deicing, anti–fogging, and preventing flight compartment heat radiation to the atmosphere.

8875. Normal operation of pitot heat is

1—off until airborne, then on for the remainder of the flight.
2—on from before takeoff to after landing.
3—on from takeoff to 10,000 ft., then off.
4—on if OAT is below 5° C (41° F) with visible moisture, otherwise off.

8876. Which is an indication that the pitot anti–icing system is operating properly?

1—Illumination of the pitot operating light.
2—An indication of current draw on the pitot amps gauge.
3—An increased reading on the ram air temperature gauge.
4—The heater inop. amber light going out when the selector switch is moved from off.

8877. Which is an indication of low fluid supply in the emergency reservoir?

1—Hydraulic quantity gauge below one–half full.
2—Auxiliary pump low–pressure light on.
3—Illumination of the low–level light.
4—Spoiler hydraulic pressure zero.

8878. Which surfaces are protected when the airfoil deicing system is placed on?

1—Wing leading edges, slots, horizontal tail, and vertical tail.
2—Wing leading edges, slots, flaps, and horizontal tail.
3—Slots, wing leading edges, and horizontal tail.
4—Leading edge flaps, tank vent scoops, and vertical tail.

8879. Which component is protected by air from the pneumatic system when the engine anti–ice switch is placed on?

1—Inlet guide vanes.
2—Nose cowl.
3—Bullet nose.
4—PT–2 probe.

8880. What occurs when the airfoil deicing timers are positioned to test during preflight? (See Figure 30.)

1—The valves open for 20 seconds if the timer is in the long cycle position.
2—The timers will run but the valves will remain closed.
3—The valves open for 10 seconds if the timer is in the normal cycle position.
4—All valves open and close at rapid cycle speed.

8881. What is indicated by illumination of an engine anti-ice light? (See Figure 30.)

1—One or more anti-ice valves for the engine are closed.
2—All anti-ice valves for the engine are in agreement with the switch.
3—All anti-ice valves for the engine are open.
4—One or more anti-ice valves for the engine are not in agreement with the switch.

8882. If there is a loss of hydraulic fluid during cruise flight, which action may help minimize the loss?

1—Place the hydraulic system selector lever in general system (2).
2—Decrease altitude to 15,000 ft. or below.
3—Turn off the autopilot.
4—Turn off the flight spoiler switch.

8883. Which condition is indicated if the orange indicators are protruding approximately 1/4-inch above the top aft portion of the wing surface after free-falling the landing gear?

1—The main gear is down and locked.
2—The main gear did not lock in the down position.
3—The main gear doors are closed.
4—The gear cannot be raised until the mechanical locks are removed.

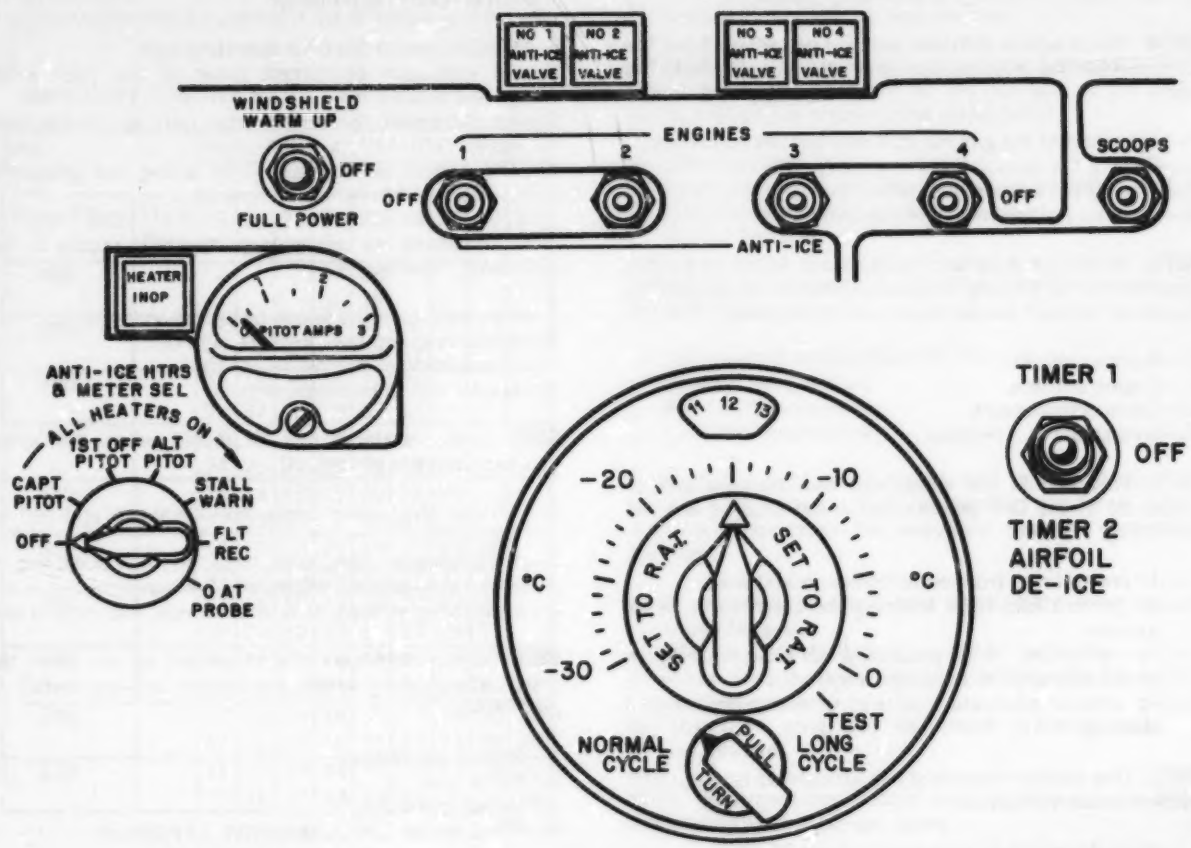


Figure 30

8884. What maintenance action is required after the airbrake system has been used to stop the airplane?

1—Recharge the air pressure bottle, resafety the emergency airbrake control handle, and reset the flapper valve.
2—The complete hydraulic system must be purged of all air and the brake air pressure bottle recharged.
3—The brake system downstream of the lockout cylinders must be purged of all air.
4—The only maintenance action required is recharging the bottle with nitrogen.

8885. What would cause an intermittent warning horn when throttles are advanced during ground operation?

1—Either right or left emergency bus power failure.
2—Landing gear control lever is out of the down detent position.
3—Ground spoilers not fully retracted.
4—Gust lock system still in the latched position.

8886. Which condition is required before checking the lockout deboost valve for proper servicing?

1—Brake gauge above precharge pressure and brakes off.
2—Brake gauge above precharge pressure and parking brake set.
3—Main antiskid switch off and brakes off.
4—Parking brake light on and antiskid switch off.

8887. During flight with the landing gear and landing gear lever down, the antiskid system

1—permits automatic brake application.
2—permits full brake application by use of the brake pedals.
3—prevents brake application.
4—prevents full brake application but permits sufficient pressure to prevent wheel rotation.

8888. If braking is initiated in excess of 120 knots during a rejected takeoff, what action is required?

1—Immediately use fog or foam extinguishant on the wheels for cooling.
2—Obtain a maintenance release prior to the next departure.
3—Continue a fast taxi down the runway for brake cooling.
4—Use emergency airbrakes to stop and park the airplane.

8889. Which item prevents system pressure loss in the event of brake line failure at the inlet to the shuttle valve?

1—Antiskid valve.
2—Lockout debooster.
3—Power brake control.
4—Gear down sequence valve.

8890. How is braking action accomplished when using the emergency pneumatic system?

1—By positioning the brake interconnect valve on the flight engineer's panel to emergency and using the brake pedals as usual.
2—By positioning the pneumatic brake control valve full open and allowing the antiskid system to relieve excess pressure.
3—By opening the pneumatic brake control valve and using the brake pedals as usual.
4—By opening the pneumatic brake control valve and metering pressure to all brakes.

8891. What would be the indication in the cockpit if the landing gear control lever was separated and the gear locked down by placing the long handle to the DOWN position?

1—The antiskid inop. light and the red landing gear unsafe light would remain on.
2—The red landing gear unsafe light would remain on.
3—All indicators would show an unsafe gear condition.
4—All indications would be normal.

8892. If the long lever of the landing gear control dual lever becomes jammed in the UP position, what would be the indications when the gear is extended by use of the short lever?

1—Red gear warning light will remain on with the gear down and locked.
2—Gear light indications will be normal.
3—Green gear lights will be on before the gear locks down.
4—Gear light indication will be normal, but the engine thrust brake lights will be inoperative.

8893. Which rule applies to the flap-operated landing gear warning device?

1—May not use part of the throttle actuated system.
2—Must have a horn silencing switch on the control pedestal.
3—Must actuate only when at least one throttle is moved to idle position.
4—May not have a manual shutoff.

8894. What action takes place regarding the main landing gear system when the landing gear lever is placed in the UP position?

1—Wheel rotation is stopped by automatic braking, the gear is retracted, then the doors are closed by bungee strut action.
2—The gear doors free-fall open, the gear retracts and mechanically pulls the gear doors closed when the gear contacts the uplock.
3—Sequence valves direct hydraulic pressure to open the gear doors, retract the gear, and then close the gear doors.
4—Wheel rotation is stopped by automatic braking, the gear is retracted, the gear doors are then closed hydraulically and locked by the lockout cylinders.

8895. Which is a mechanical ground function of the ground shift mechanism?

1—Place the pneumatic cross-feed valve to the OPEN position.
2—Aircraft depressurization by opening the outflow valve.
3—Make nosewheel accumulator pressure available for nosewheel steering.
4—Place the pneumatic system in low-pressure bleed for ground operation.

8896. Which condition prevents moving the landing gear lever to the UP position after takeoff?

1—The nose gear shock strut not extended.
2—One main gear shock strut not extended.
3—A main gear wheel assembly out-of-level position.
4—Loss of hydraulic pressure to the gear up mechanism.

8897. With the auxiliary pump on, and the selector in position to use fluid from the emergency hydraulic reservoir, what would be the reading on the hydraulic system pressure gauge?

1—Normal system operating pressure.
2—One-half normal pressure.
3—Static or zero pressure.
4—Higher than normal pressure, up to relief valve setting.

8898. When should the auxiliary hydraulic pump switch be held in START position?

1—To provide added pressure for landing gear operation.
2—Only to overcome a thermal cutout during emergencies.
3—To overcome the opening of the circuit breaker if the pump motor draws excessive current.
4—Only to overcome a high fluid temperature during emergency gear extension.

8899. What is normal hydraulic system pressure and relief valve full-open pressure?

1—2,000 PSI and 3,000 PSI.
2—3,000 PSI and 3,500 PSI.
3—3,000 PSI and 4,000 PSI.
4—3,250 PSI and 3,500 PSI.

8900. What is the correct sequence of switch positions to dump fuel and then retract the dump chutes?

1—Fuel dump – retract.
2—Fuel dump – drain; retract.
3—Extend – fuel dump; drain; retract.
4—Extend – fuel dump; retract.

8901. Which is the correct procedure after fuel has been dumped?

1—Move the fuel dump switch and the handle to the retract position and visually check that all dump valves have closed.
2—Pull the handle and move the fuel dump switch to the drain position and leave for 5 minutes.
3—Move the fuel dump switch to the retract position.
4—Move the fuel dump switch to the drain position and leave for 5 minutes.

8902. If the cable system to the fuel dump chute has failed, what would be the indication?

1—The selector switch would be in the DRAIN position.
2—A red warning flag on the bottom surface of each wing.
3—A tripped circuit breaker for the fuel dump actuator motor.
4—The handcrank would be mechanically locked in the RETRACT position.

8903. Which location is monitored by the fuel temperature gauge?

1—Tank No. 1 only.
2—Tank No. 4 only.
3—All fuel filters only.
4—All main fuel filters and tank No. 4.

8904. Which valves in the fuel system are electrically operated?

1—Cross-feed valves.
2—Tank selector valves.
3—Fill valves.
4—Defueling valve.

8905. An alternate tank boost pump is placed on when supplying the engine with alternate tank fuel and also when

1—main tank fuel is being transferred to the alternate tank.
2—transferring fuel to the main tank.
3—transferring fuel to the auxiliary tank.
4—auxiliary tank fuel is being transferred to the alternate tank.

8906. What is indicated by illumination of a feed pump pressure light on the flight engineer panel?

1—Tank boost pump and tank feed pump are both off.
2—Fuel is entering the associated tank from another tank.
3—Associated feed pump is energized but its output is low.
4—No fuel can be drawn from the associated alternate tank.

8907. The flight recorder automatically records the airplane's

1—airspeed, altitude, time, heading, and rate of climb or descent.
2—acceleration, indicated altitude, Mach, and compass heading.
3—course, altitude, Mach, vertical acceleration, and flight time.
4—indicated airspeed, pressure altitude, heading, vertical acceleration, and elapsed time.

8908. What is the relationship between static air temperature and ram air temperature in cruising flight at high altitude?

1—Static air temperature is always lower (colder) than ram air temperature.
2—Static air temperature minus ram air temperature equals true air temperature.
3—Ram air temperature plus true air temperature equals static air temperature.
4—Ram air temperature is always lower (colder) than static air temperature.

8909. Which type of temperature indication is provided by the total air temperature gauge?

1—Ambient air temperature.
2—Ram air temperature corrected for ram rise.
3—OAT plus ram rise.
4—OAT corrected for static system error.

8910. What should be the setting of the maximum-speed needle on the airspeed indicator during preflight inspection with electrical power on?

1—V_{REF}.
2—M_{MO}.
3—V_{MO}.
4—Zero.

8911. Which indication signifies that the Mach/airspeed limit has been exceeded?

1—A steady bell rings.
2—An intermittent horn will sound.
3—A wailing horn (siren) will sound.
4—A clacker will sound.

8912. What is the effect of placing the altimeter selector switch (servo switch) off?

1—The altimeter becomes completely inoperative.
2—Autopilot data is removed from the altimeter.
3—Altimeter pressure is obtained from the pitot system.
4—Air data computer corrections are removed.

8913. Both the ram air input passage and the drain hole of a pitot system are blocked by ice. What erroneous indication will appear on the Machmeter when descending at a constant thrust setting?

1—Remains fixed at a constant value.
2—Mach number gradually decreases.
3—Mach number gradually increases.
4—Drops to the minimum value shown on the indicator.

8914. If a hydraulic malfunction occurs, requiring the use of fluid from the emergency reservoir, what will be the effect upon flap and slot operation?

1—The flap position indicator and wing slots light will be inoperative.
2—The slots will remain closed when flaps are extended.
3—The slots will remain open when flaps are retracted.
4—The inboard flaps and inboard slots, only, will be operational.

8915. Which is an operating feature of the rudder system after loss of the main system hydraulic fluid?

1—The rudder can be powered hydraulically by placing the rudder standby switch in start position and observing the rudder control manual light going out.
2—The rudder can be powered hydraulically by placing the selector lever to bypass/general system and turning the auxiliary pump on.
3—The rudder would be operable only by manual control.
4—The rudder would automatically revert to standby electric boost in event of main system hydraulic fluid loss.

8916. Which engines drive variable displacement hydraulic pumps?

1—Engines Nos. 1 and 3.
2—Engines Nos. 1 and 2.
3—Engines Nos. 1, 2, 3, and 4.
4—Engines Nos. 2 and 3.

8917. When performing the pitch trim compensator preflight test, what should be indicated with the switch in the override position?

1—The indicator should extend and the control column should move forward.
2—The PTC extend fail light should come on and the copilot's column should move aft.
3—The indicator should retract and the PTC extend fail light should go off.
4—The PTC extend fail light should go off, the indicator retract, and the control column move aft.

8918. How can the horizontal stabilizer be actuated with a complete electrical failure?

1—By using the suitcase handles.
2—By movement of the control column.
3—By rotating the manual trim wheel.
4—By autopilot action only.

8919. Which type operation would result if the suitcase handles were split?

1—The stabilizer could be operated electrically.
2—The stabilizer could not be operated.
3—The stabilizer could be operated manually.
4—The pitch trim compensator could move the stabilizer.

8920. The purpose of the priority valve during all flight operations is to

1—provide main system pressure to the flaps and gear downlocks.
2—maintain hydraulic system pressure between 1,175 – 1,500 PSI.
3—ensure adequate pressure to the flight controls when heavy demands are placed on the hydraulic system.
4—give priority to the flight spoilers when needed.

8921. The gust lock system mechanically locks the

1—rudder.
2—elevators.
3—ailerons.
4—elevators and rudder.

8922. During an approach, the rudder throw and hydraulic pressure available is increased when the

1—landing gear is extended for landing.
2—standby rudder pump is started to assure adequate pressure.
3—wing flaps are extended 10° or more.
4—auxiliary hydraulic pump switch is placed on.

8923. Which is an indication of an inoperative tank boost pump? (See Figure 31.)

1—Fuel boost pump low-pressure light on.
2—Low pressure on the fuel pressure gauge.
3—Feed pump pressure light on.
4—Fuel flow indicator reading low for EPR being used.

8924. How is fuel in the alternate tanks ordinarily consumed? (See Figure 31.)

1—By gravity feed to the associated engine.
2—By transfer to the center tank.
3—By transfer to adjacent main tank.
4—By cross-feed to either two or four engines at a time.

8925. What will happen during fuel transfer, if the tank quantity indicator needle reaches the bug setting? (See Figure 31.)

1—Fuel level control valve will close electrically.
2—Fuel transfer valve will close.
3—Alternate tanks low-level lights will illuminate.
4—Fill valve will close.

8926. What should be the indication when the test button of a fuel quantity indicator (FE panel) is depressed? (See Figure 31.)

1—Quantity indication should not change.
2—Indication should fluctuate between 100 and 200 lb.
3—Indication should move toward zero.
4—Indication should move toward full.

8927. Which procedure is normally used to partially fill No. 2 main tank while using the underwing refueling system? (See Figure 31.)

1—Manually close the fill valve when the desired level is reached.
2—Set the No. 2 fuel quantity indicator pointer to the desired level.
3—Close the selector valve to No. 2 main tank when fuel reaches the desired level.
4—Close the tank fill valve at the underwing refueling panel when the desired level is reached.

8928. Which pressure sources are indicated on the fuel pressure gauge? (See Figure 31.)

1—Tank boost pump and engine boost pump.
2—Engine boost pump and tank feed pump.
3—Tank boost pump and tank feed pump.
4—Engine boost pump, tank boost pump, and tank feed pump.

8929. What is the purpose of the pitch trim compensator?

1—Provide automatic stabilizer trim setting for takeoff and landing.
2—Prevent excessive elevator tab displacement during autopilot flight.
3—Compensate for a nosedown pitch change as airspeed approaches critical Mach.
4—Compensate for a rearward movement of the CG as airspeed approaches the speed of sound.

8930. Which is the preferred method of combating a brake fire on the ground?

1—Spray warm water fog over the wheel and brake assembly.
2—Keep the engine running to blow out the fire.
3—Use a dry chemical fire extinguisher.
4—Completely smother the gear with a foam extinguishing agent.

8931. At what point during a normal landing approach should pressure be indicated on the spoiler hydraulic system gauge?

1—When the flaps extend past 23°.
2—When the nose gear strut is compressed.
3—Immediately after the gear goes to the down position.
4—Within 30 seconds after the flight spoiler switch has been placed to the on position.

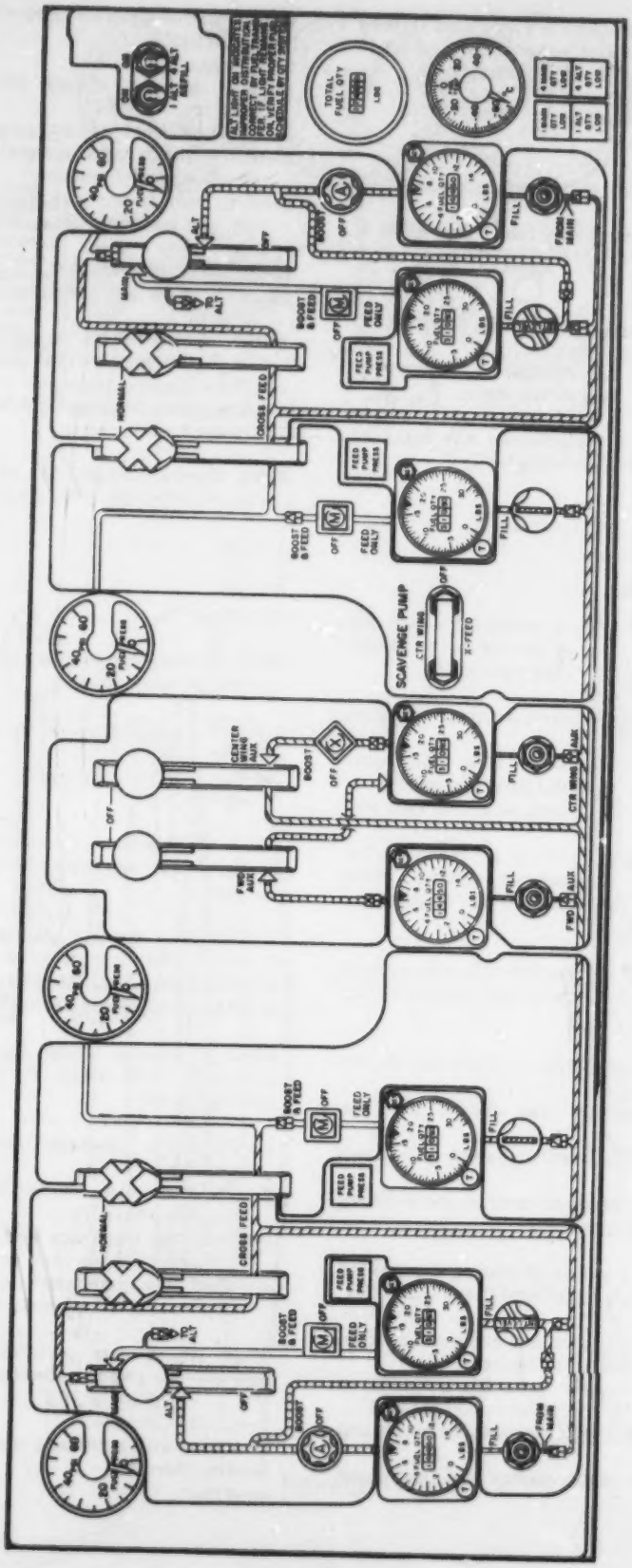

SCAVENGE PUMP
CTR WING
X-FEED
OFF
BOOST & FEED
FEED ONLY
FEED PUMP PRESS
FILL
FROM MAIN
NORMAL
CROSS FEED
CENTER WING AUX
BOOST
CTR WING AUX
FWD AUX
TOTAL FUEL QTY
LBS

Figure 31

8932. Which flight control systems are operated directly by hydraulic power cylinders but automatically revert to manual control in event of hydraulic system failure?

1—Rudder, ailerons, and elevators only.
2—Rudder and ailerons only.
3—Rudder only.
4—Rudder, ailerons, elevators, and leading edge slots.

8933. Before two a.c. generators may feed a single bus in parallel operation, they should be performing with approximately equal

1—field current, generator speed, and phase angle.
2—voltage, amperage, and engine speed.
3—frequency, engine speed, and voltage.
4—voltage, generator speed, and phase angle.

8934. Making corrections for unbalanced KW loads of paralleled generators is a function of the

1—frequency control knob.
2—voltage regulation system.
3—constant speed drive system.
4—synchronizing bus system.

8935. How is hydraulic pressure provided when the hydraulic system selector lever is placed in the FULL DOWN (bypass/general) position? (See Figure 32.)

1—The engine-driven pumps provide reduced pressure to the general system.
2—The auxiliary pump using fluid from the main reservoir provides pressure to the general system.
3—The auxiliary pump provides pressure to the flaps and gear locks only.
4—The engine-driven pumps provide pressure to the general system, and the auxiliary pump using auxiliary reservoir fluid provides pressure to the flaps and gear locks.

8936. What is the effect of placing the hydraulic system selector lever in the FULL UP (emergency) position? (See Figure 32.)

1—The engine-driven pump output is bypassed to the reservoir.
2—The engine-driven pumps use fluid from the emergency reservoir.
3—Auxiliary pump output is directed to the gear-down locks and wing flaps.
4—Fluid from the main reservoir is used by the auxiliary pump for gear and flap operation.

8937. What would be the purpose of placing the ground spoiler power switch in the ALT position? (See Figure 32.)

1—To open the interconnect valve and allow use of main system pressure in flight for spoiler extension.
2—To arm the spoiler system for automatic extension of ground spoilers when the nose strut is compressed.
3—To provide main system hydraulic pressure for ground spoiler extension.
4—To override the spoiler pump control and start pump operation.

8938. What indications assure that a generator drive has disconnected?

1—D.C. and a.c. voltage zero; generator unparalleled light on.
2—Bus power fail light on; generator drive oil light on.
3—A.C. voltage zero, generator drive oil light on, and frequency off-scale low.
4—A.C. voltage and amperage zero, generator fail light on, and generator drive light on.

8939. What is indicated by a flashing or intermittent generator drive oil warning light?

1—Loss of fluid in the generator drive unit.
2—High oil pressure in the generator drive unit.
3—The respective generator is not carrying a load.
4—The generator drive fluid temperature is in the caution range.

8940. During preflight with all a.c. power off, what is the minimum allowable battery voltage?

1—20V.
2—22V.
3—24V.
4—26V.

8941. Illumination of a bus power fail light would indicate opening of which relay?

1—BTR.
2—LMR.
3—GR.
4—ACR.

8942. What action would normally be taken if a generator overload warning light illuminates while operating in parallel?

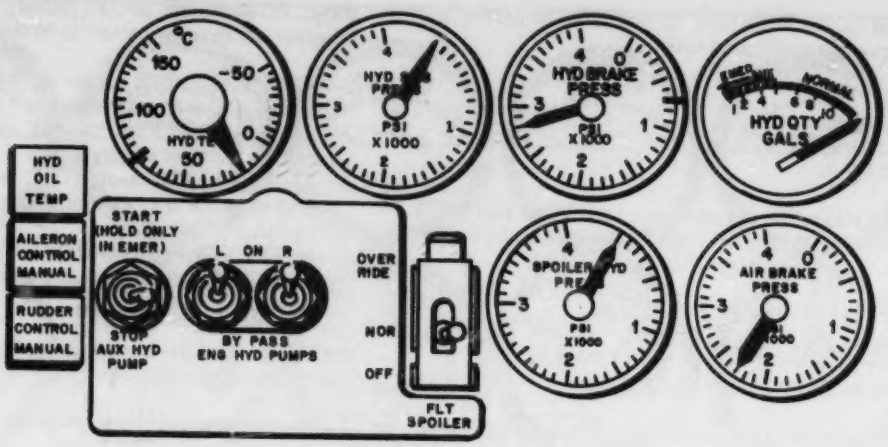
1—Switch off the EEC switches.
2—Unparallel the generators.
3—Place the a.c. isolate switch to ISOLATE.
4—Reduce the electrical loads.

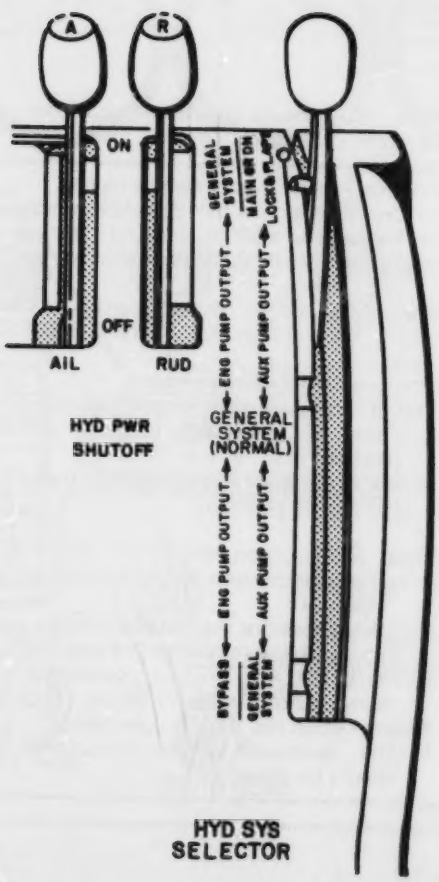
8943. If during cruise flight, manual tripping of a generator field relay is required, how can it be accomplished?

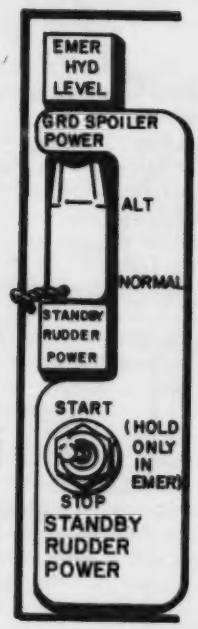
1—Place the generator drive lever in the DISENGAGE position.
2—Place the fire shutoff lever in the INTERMEDIATE position (the dot).
3—Hold the frequency and load control switch to LOW position until the fault system opens the GFR.
4—Hold the generator control switch in the OPEN position for 10 seconds.

8944. Which type portable fire extinguisher is most desirable for use on galley fires?

1—Carbon dioxide.
2—Water with antifreeze agent.
3—Dry chemical.
4—Freon.


HYD OIL TEMP
AILERON CONTROL MANUAL
RUDDER CONTROL MANUAL
START (HOLD ONLY IN EMER)
L ON R
STOP AUX HYD PUMP
BY PASS ENG HYD PUMPS
OVER RIDE
NOR
OFF
FLT SPOILER
HYD BRAKE PRESS
PSI X1000
HYD QTY GALS
SPOILER HYD PRESS
AIR BRAKE PRESS


A
R
ON
OFF
AIL
RUD
GENERAL SYSTEM MAIN GRDN
LOCKS & FLAPS
ENG PUMP OUTPUT
AUX PUMP OUTPUT
HYD PWR SHUTOFF
GENERAL SYSTEM (NORMAL)
BYPASS
HYD SYS SELECTOR


EMER HYD LEVEL
GRD SPOILER POWER
ALT
NORMAL
STANDBY RUDDER POWER
START
(HOLD ONLY IN EMER)
STOP
STANDBY RUDDER POWER

AUX HYD PUMP
STOP
START
(HOLD ONLY IN EMER)
AUX PUMP ON

Figure 32

8945. What is the maximum allowable RPM during the cabin compressor overspeed test?

1—4,000 RPM.
2—15,000 RPM.
3—20,000 RPM.
4—50,000 RPM.

8946. What should be the position of the VOLT and FREQ SELECTOR and BATT-EXT PWR switches to obtain the static voltage of the battery? (See Figure 33.)

1—Selector to OFF; switch to BATT.
2—Selector to BATT; switch to BATT.
3—Selector to D.C. TIE; switch to EXT PWR.
4—Selector to BATT; switch to OFF.

8947. If a generator unparalleled light illuminates during cruise flight, which indication can be used to determine if the generator relay or the bus tie relay had opened? (See Figure 33.)

1—The voltage and frequency of the generator.
2—The CSD temperature drop for that generator.
3—The a.c. loadmeter reading for that generator.
4—The position of the generator control switch.

8948. With the T/R units in isolated position, what is indicated on the d.c. loadmeters? (See Figure 33.)

1—Current available at the corresponding T/R unit in percentage of T/R rating.
2—Current drawn from the corresponding T/R unit in percentage of T/R rating.
3—The generator or d.c. tie bus voltage available to the corresponding T/R unit.
4—The average current drawn from the four T/R units.

8949. During preflight, with no engines running, what should be the readings on the d.c. and a.c. loadmeters when external a.c. is supplying electrical power? (See Figure 33.)

1—D.C. loadmeters should indicate 24V, and a.c. loadmeters should indicate 115V.
2—All loadmeters should indicate some load.
3—All loadmeters should indicate zero.
4—D.C. loadmeters should indicate load, and a.c. loadmeters should indicate zero.

8950. When using the aircraft battery to start engine No. 3, what should be the position of the bus power emergency electrical control switches? (See Figure 33.)

1—All OFF.
2—Nos. 1, 2, and 4 OFF; No. 3 NORMAL.
3—All NORMAL.
4—Nos. 1, 2, and 4 NORMAL; No. 3 OFF.

8951. In event the aircraft battery voltage is low, which selection will allow the battery to be charged? (See Figure 33.)

1—BATT – EXT PWR switch in BATT and external a.c. electrical power supplying the d.c. tie bus.
2—BATT – EXT PWR switch in BATT and aircraft electrical power supplying the d.c. tie bus.
3—BATT – EXT PWR switch OFF, selector switch in BATT, and external a.c. electrical power supplying the d.c. tie bus.
4—BATT – EXT PWR switch in EXT PWR, selector switch in BATT and external d.c. power supplying the d.c. tie bus.

8952. Which is the normal inflight source of hot air in the freon air-conditioning system?

1—Turbocompressor discharge air.
2—Engine turbine section air.
3—Engine fan air.
4—Electric heat exchanger.

8953. What is the maximum d.c. load limit while the aircraft is on the ground?

1—0.5.
2—1.0.
3—1.3.
4—1.5.

8954. What should be the setting of the cabin pressure controller prior to takeoff?

1—Cruise flight level or slightly higher.
2—Cruise altitude or field elevation, whichever is lower.
3—To maintain a 500 ft./min. rate of climb.
4—To maintain 8.77 PSI differential.

8955. What action should correct cabin compressor surging while at high altitude cruise flight?

1—Open the rain removal valve.
2—Place the pneumatic shutoff switches to LOW position.
3—Place the pneumatic shutoff switches to HIGH position.
4—Place the cabin compressor's manual controller in DECREASE position.

8956. Which action should be taken if No. 2 cabin compressor shuts down because of an overspeed?

1—The compressor may be restarted by placing the No. 2 cabin compressor switch OFF and then ON.
2—Place the No. 2 cabin compressor switch OFF; a restart is not possible in the air.
3—Shut down No. 1 cabin compressor.
4—The associated engine pneumatic system switch should be placed OFF.

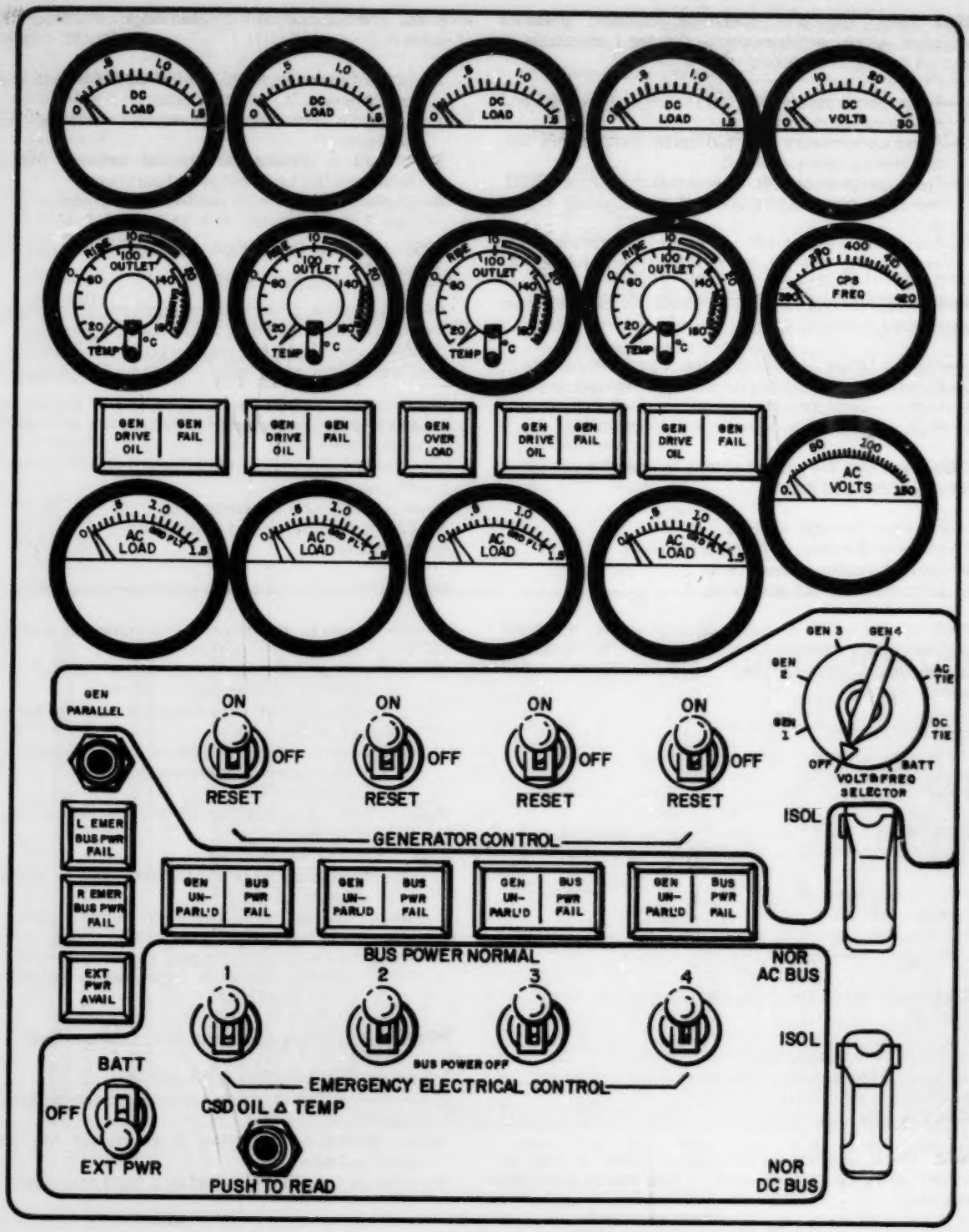

DC LOAD
DC VOLTS
OUTLET
TEMP °C
CPS FREQ
GEN DRIVE OIL
GEN FAIL
GEN OVER LOAD
AC VOLTS
AC LOAD
GEN PARALLEL
ON
OFF
RESET
GEN 3
GEN 4
GEN 2
GEN 1
AC TIE
DC TIE
OFF
BATT
VOLT & FREQ SELECTOR
ISOL
GENERATOR CONTROL
GEN UN-PARL'D
BUS PWR FAIL
L EMER BUS PWR FAIL
R EMER BUS PWR FAIL
EXT PWR AVAIL
BUS POWER NORMAL
BUS POWER OFF
NOR AC BUS
NOR DC BUS
BATT
EXT PWR
EMERGENCY ELECTRICAL CONTROL
CSD OIL Δ TEMP
PUSH TO READ

Figure 33

8957. With sufficient pneumatic system pressure available, which condition would give the best results in aircraft cooling while taxiing in on a hot day?

1—Freon compressors OFF, recirculating fans ON, and mixing valves in port A.
2—Freon compressors ON, two cabin compressors ON, and mixing valves in port C.
3—Freon compressors ON, all recirculating fans in AUTO, two cabin compressors ON, and mixing valves in port A.
4—Freon compressors ON, all cabin compressors OFF, recirculating fans ON, and mixing valves in full port A.

8958. What is indicated by illumination of the cabin compressor overheat light?

1—High oil temperature in the cabin compressor.
2—Excessive temperature pneumatic system air.
3—High temperature turbocompressor discharge air.
4—High volume airflow from the cabin compressor.

8959. How can the rate of smoke removal be increased during pressurized flight?

1—Increase the cabin altitude.
2—Increase the cabin differential pressure.
3—Close the cabin sidewall vents.
4—Open the wing anti-ice valves.

8960. In the event of cabin decompression, the flight engineer should visually check to see that the passenger oxygen masks dropped when the cabin altitude reached approximately

1—8,000 ft.
2—10,000 ft.
3—12,000 ft.
4—14,000 ft.

8961. What should you check if a warning horn sounds intermittently while in cruise flight?

1—Stabilizer position.
2—Cabin altitude.
3—Differential pressure.
4—Outflow valve position.

8962. How should the pressurization controls be set for landing?

1—Flight altitude – sea level.
2—Cabin altitude – airport elevation.
3—Differential pressure – .125 PSI.
4—Cabin rate – 500 ft./min.

8963. Which selection of an oxygen control is used to prevent entrance of flight deck air into the crew oxygen regulator?

1—Supply lever – OFF.
2—Emergency (mask) lever – NORMAL.
3—Oxygen (selector) lever – 100 percent.
4—Oxygen (selector) lever – NORMAL.

8964. The function of the cabin negative pressure relief valve is to

1—prevent exceeding .125 PSI differential pressure when on the ground.
2—prevent atmospheric pressure exceeding cabin pressure.
3—prevent a pressure differential between the main cabin and the lower cargo compartments.
4—prevent landing with a positive cabin pressure.

8965. How are the outflow butterfly and nozzle valves operated?

1—Auto control, pneumatic; manual control, mechanical.
2—Auto control, electric; manual control, pneumatic.
3—Auto control, electric; manual control, mechanical.
4—Auto control, pneumatic; manual control, pneumatic.

8966. Which aircraft area contains a fire-detection system and is also protected by a fixed fire-extinguishing system?

1—Engine nacelle.
2—Lower electrical compartment.
3—Engine hot section and wheel well.
4—Wheel well.

8967. What is the function of a turbocompressor?

1—Use engine or ground cart air to compress outside air for air-conditioning and pressurization.
2—Use engine bleed air to compress outside air for pressurization and heating.
3—Use engine turbine air to compress cabin air for high-altitude operation.
4—Compress outside air and permit expansion through a turbine to create a temperature drop.

8968. Which is a feature of the passenger oxygen deployment system?

1—The oxygen masks will automatically drop at 10,000 ft. cabin altitude.
2—When masks are deployed automatically, an intermittent horn is energized in the cockpit.
3—The masks supply oxygen only when the user inhales.
4—The automatic system is bypassed by actuating a switch on the flight deck.

8969. The oxygen supply valve at a passenger unit

1—will open at 14,000 ft. cabin altitude.
2—is opened when the mask is pulled to the passenger's face.
3—is opened by actuating a switch on the pilot's overhead panel.
4—must be opened and closed by a flight attendant.

8970. What is a purpose of the test feature of the crew oxygen regulator?

1—To check the supply off valve for proper setting.
2—To check emergency operation of the regulator.
3—To provide an operational check of the regulator prior to takeoff.
4—To clear the mask of contaminants.

8971. With the supply lever on, what condition of oxygen flow should exist when the selector on the regulator is placed in emergency?

1—Continuous flow of diluted oxygen under positive pressure.
2—Continuous flow of 100 percent oxygen under positive pressure.
3—100 percent oxygen available on demand.
4—Diluted oxygen available on demand.

8972. The gross weight of the aircraft is 328,000 lb. How much weight must be moved from station 1010.0 to station 500.0 to move the CG forward 3.3 inches?

1—1,987 lb.
2—2,123 lb.
3—2,215 lb.
4—2,300 lb.

8973. Determine the minimum oxygen cylinder pressure required under the following conditions. (See Figure 34.)

Airplane cruise altitude.....25,000 ft.
No. of persons breathing oxygen.....4
Cabin pressure.....1 PSI
Time 100% oxygen required.....72 min.

1—420 PSIG.
2—520 PSIG.
3—900 PSIG.
4—1,050 PSIG.

8974. Determine the minimum oxygen cylinder pressure required under the following conditions. (See Figure 34.)

Airplane cruise altitude.....25,000 ft.
No. of persons breathing oxygen.....4
Cabin pressure.....0.5 PSI
Time normal oxygen required.....80 min.

1—550 PSIG.
2—650 PSIG.
3—900 PSIG.
4—1,000 PSIG.

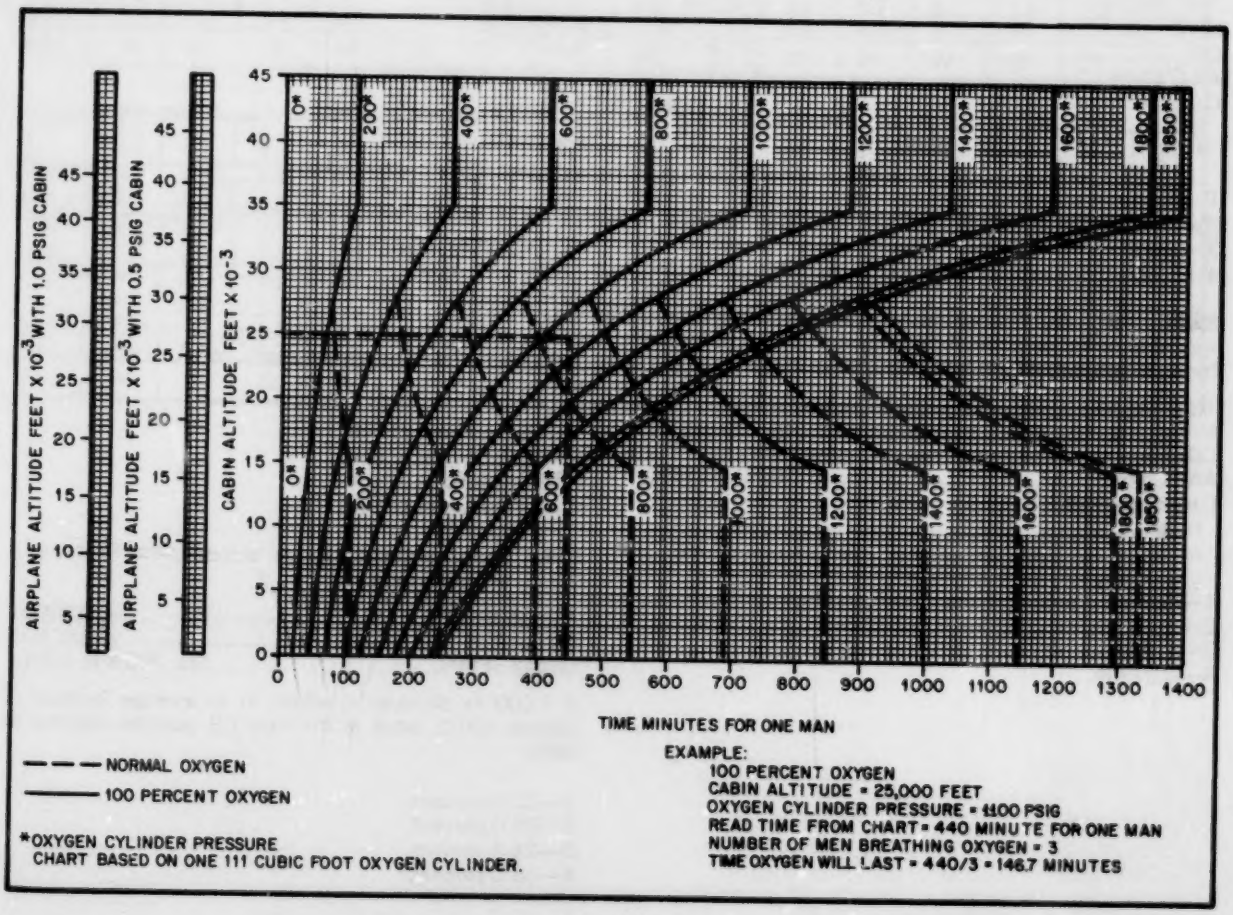


Figure 34

8975. The gross weight of the aircraft is 285,000 lb. How much weight must be moved from station 1030.0 to station 600.0 to move the CG forward 2.3 inches?

1—1,270 lb.
2—1,475 lb.
3—1,525 lb.
4—1,765 lb.

8976. What is the maximum payload under these conditions?

Basic operating weight.....150,000 lb.
Max. zero fuel weight.....230,000 lb.
Max. landing weight.....265,000 lb.
Max. takeoff weight.....340,000 lb.
Fuel tank load.....102,000 lb.
Est. fuel burn en route.....75,500 lb.

1—75,500 lb.
2—80,000 lb.
3—84,000 lb.
4—88,500 lb.

8977. Using the data given, determine the minimum weight of cargo which must be shifted from the aft to the forward compartment to bring the CG within limits.

Total weight.....310,000 lb.
MAC.....Sta. 795 – 1068
CG.....31.8% MAC
Aft CG limit.....30.0% MAC
Cargo centroids:
Fwd.....440"
Aft.....1320"

1—635 lb.
2—1,732 lb.
3—1,602 lb.
4—1,843 lb.

8978. Using the data given, determine the minimum weight of cargo which must be shifted from the aft to the forward compartment to bring the CG within limits.

Total weight.....280,000 lb.
MAC.....Sta. 795 – 1068
CG.....32.0% MAC
Aft CG limit.....30.0% MAC
Cargo centroids:
Fwd.....440"
Aft.....1320"

1—636 lb.
2—1,738 lb.
3—1,843 lb.
4—2,217 lb.

8979. An aircraft is ready for takeoff with these loading conditions:

Takeoff weight.....280,000 lb.
CG.....28.8% MAC
MAC.....795.8" – 1068.6"
Compartment locations:
Fwd.....440"
Aft.....1320"

Before takeoff, 3,250 lb. of cargo is shifted from the aft to the forward compartment. What is the new CG location?

1—22.5 percent of MAC.
2—23.9 percent of MAC.
3—25.1 percent of MAC.
4—26.7 percent of MAC.

8980. Before a cargo change is made, the following is known about an airplane:

Aircraft weight.....290,000 lb.
CG position.....20.5% MAC
Length of MAC.....Sta. 795.8 to 1068.6

If 6,000 lb. of cargo is added to an average location of station 1320.0, what is the new CG position relative to MAC?

1—20.2 percent.
2—22.6 percent.
3—24.0 percent.
4—25.1 percent.

8981. An aircraft is ready for takeoff with these loading conditions:

Takeoff weight.....300,000 lb.
CG.....25.5% MAC
MAC.....795.8" – 1068.6"
Compartment locations:
Fwd.....440"
Aft.....1320"

Before takeoff, 3,500 lb. of cargo is shifted from the forward to the aft compartment. What is the new CG location?

1—21.7 percent of MAC.
2—27.3 percent of MAC.
3—28.1 percent of MAC.
4—29.3 percent of MAC.

8982. Before a cargo change is made, the following is known about an airplane:

Aircraft weight.....310,000 lb.
CG position.....29.5% MAC
Length of MAC.....Sta. 795.8 to 1068.6

If 7,000 lb. of cargo is added to an average location of station 440.0, what is the new CG position relative to MAC?

1—25.3 percent.
2—26.0 percent.
3—28.3 percent.
4—33.0 percent.

8983. Determine the stabilizer trim setting for takeoff. (See Figure 35.)

Takeoff weight.....315,000 lb.
Takeoff total moment index.....2695.8
Reduction factor.....100,000
MAC.....272.8
LEMAC.....Sta. 795.8
Flap setting.....23°

1—4.2.
2—6.0.
3—6.8.
4—7.1.

8984. Determine the stabilizer trim setting for takeoff. (See Figure 35.)

Takeoff weight.....265,000 lb.
Takeoff total moment index.....2278.7
Reduction factor.....100,000
MAC.....272.8
LEMAC.....Sta. 795.8
Flap setting.....23°

1—3.9.
2—4.1.
3—4.4.
4—4.9.

TOGW WT	Model DC-8-63F						FLAPS – 23°			Stabilizer Angle for Take-Off					
355	10.0	9.5	9.0	8.6	7.8	7.5	6.9	6.5	5.7	5.4	4.8	4.3	3.7	3.4	2.6
350	9.8	9.4	9.0	8.5	7.7	7.4	6.8	6.3	5.6	5.3	4.7	4.2	3.6	3.3	2.5
340	9.4	9.0	8.1	7.8	7.3	6.9	6.4	6.0	4.9	4.8	4.4	3.9	3.4	2.9	2.2
320	8.7	8.2	7.8	7.2	6.9	6.5	6.1	5.5	4.6	4.5	4.0	3.8	3.2	2.7	2.1
300	8.2	7.8	7.5	7.0	6.6	6.3	5.8	5.2	4.3	4.2	3.8	3.4	2.9	2.5	1.9
280	8.1	7.6	7.2	6.7	6.5	5.9	5.6	4.9	4.1	4.1	3.7	3.2	2.8	2.3	1.7
260	7.8	7.5	7.0	6.5	6.2	5.6	5.3	4.8	3.9	3.8	3.4	2.9	2.8	2.0	1.6
240	7.7	7.3	6.8	6.3	6.0	5.5	5.2	4.7	3.8	3.7	3,3	2.8	2.4	1.9	1.5
220	7.6	7.1	6.7	6.2	5.9	5.4	5.1	4.6	3.6	3.6	3.2	2.7	2.2	1.8	1.3
200	7.5	7.0	6.6	6.1	5.8	5.3	5.0	4.5	3.4	3.3	3.1	2.5	2.1	1.7	.9
MAC	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
							FLAPS – 18°								
355	10.0	9.9	9.4	9.0	8.4	7.8	7.3	6.8	6.2	5.6	5.3	4.7	4.1	3.4	2.8
350	10.0	9.8	9.3	8.9	8.3	7.7	7.1	6.7	6.1	5.5	5.2	4.6	4.0	3.3	2.7
340	9.8	9.3	8.9	8.4	7.9	7.3	6.7	6.3	5.8	5.3	4.8	4.2	3.7	3.2	2.6
320	9.0	8.8	8.3	7.7	7.1	6.7	6.3	5.9	5.3	4.9	4.3	3.9	3.3	2.9	2.4
300	8.8	8.5	7.9	7.2	7.0	6.5	6.1	5.6	5.1	4.5	4.1	3.7	3.1	2.7	2.2
280	8.4	7.9	7.6	7.0	6.6	6.1	5.6	5.3	4.6	4.4	3.9	3.3	2.8	2.4	1.9
260	8.1	7.6	7.2	6.7	6.2	5.7	5.4	5.0	4.3	4.2	3.7	3.1	2.6	2.2	1.8
240	7.9	7.3	7.1	6.4	6.1	5.5	5.2	4.8	3.9	3.8	3.4	3.0	2.3	2.0	1.6
220	7.8	7.0	6.8	6.1	5.7	5.4	4.9	4.4	3.8	3.6	3.2	2.7	2.2	1.7	1.1
200	7.1	6.4	6.2	5.6	5.3	5.2	4.6	3.9	3.6	3.4	2.8	2.4	1.8	1.2	.9
MAC	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

Figure 35

Table 1

OPERATING CONDITIONS		1	2	3
Departure Airport Elevation	FT.	1,000	2,000	1,500
Pressurization Start FT. above Airport		500	1,000	---
Cruising Altitude	FT.	20,000	22,000	25,000
Desired Cabin Altitude	FT.	8,000	7,000	8,000
Aircraft Rate of Climb	FT./MIN.	750	800	1,900

8985. What cabin rate of climb is required to reach cruising altitude and desired cabin altitude at the same time under operating conditions No. 1, Table 1?

1—264 ft./min.
2—281 ft./min.
3—300 ft./min.
4—313 ft./min.

8986. What cabin rate of climb is required to reach cruising altitude and desired cabin altitude at the same time under operating conditions No. 2, Table 1?

1—153 ft./min.
2—170 ft./min.
3—195 ft./min.
4—206 ft./min.

8987. What cabin rate of climb is required to reach cruising altitude and desired cabin altitude at the same time under operating conditions No. 3, Table 1?

1—500 ft./min.
2—528 ft./min.
3—605 ft./min.
4—650 ft./min.

8988. What is the total fuel burn under operating conditions No. 1, Table 2?

1—12,800 lb.
2—14,440 lb.
3—22,160 lb.
4—44,320 lb.

8989. What is the total fuel burn under operating conditions No. 2, Table 2?

1—12,600 lb.
2—16,700 lb.
3—18,130 lb.
4—24,050 lb.

8990. What is the total fuel burn under operating conditions No. 3, Table 2?

1—16,130 lb.
2—17,850 lb.
3—19,200 lb.
4—23,150 lb.

8991. What is the total fuel burn for a 1,500 NMI cruising flight under operating conditions No. 4, Table 2?

1—18,840 lb.
2—19,060 lb.
3—19,200 lb.
4—22,500 lb.

Table 2

OPERATING CONDITIONS		1	2	3	4
NAM/1,000 LB.		55.4	62.0	67.2	72.5
TAS	KT.	200	220	240	260
Wind Component	KT.	10 HW	10 TW	20 HW	20 TW
Cruise Time	HR.	4.0	4.5	5.0	--

Table 3

OPERATING CONDITIONS		1	2	3
Pressure Altitude	FT.	1,000	10,000	1,500
CAS	KT.	100	140	120
Ambient Temperature	°C	0	-10	-30

8992 What is the minimum torque required for takeoff under operating conditions No. 1, Table 3; according to the Takeoff Torque Chart? (See Figure 36.)

1—12,400 in./lb.
2—16,600 in./lb.
3—18,000 in./lb.
4—18,300 in./lb.

8993. What is the minimum torque required for takeoff under operating conditions No. 2, Table 3; according to the Takeoff Torque Chart? (See Figure 36.)

1—12,400 in./lb.
2—13,800 in./lb.
3—14,400 in./lb.
4—15,000 in./lb.

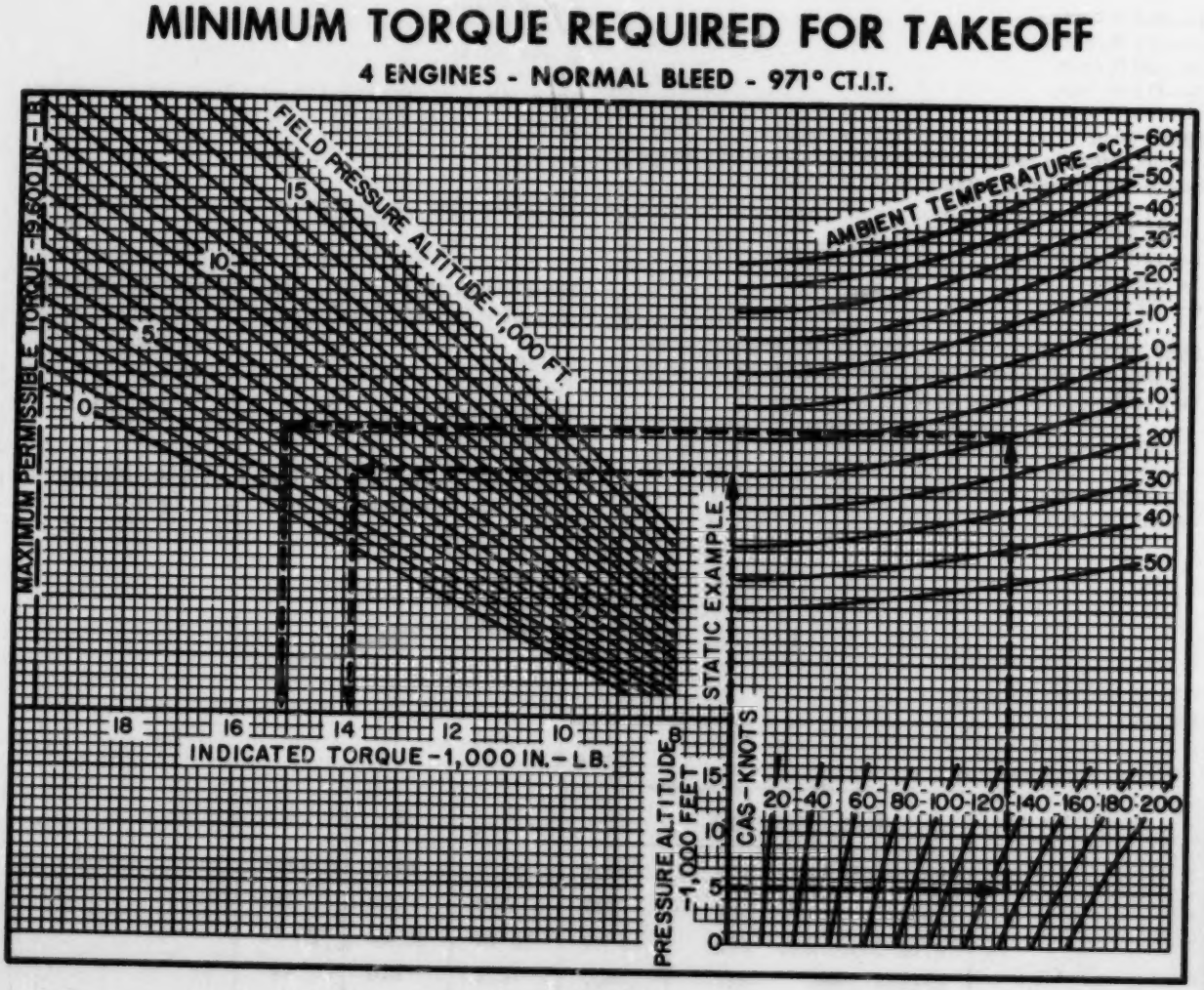


Figure 36

Table 4

OPERATING CONDITIONS		1	2	3
Gross Weight	LB.	140,000	115,000	145,000
Pressure Altitude	FT.	16,000	20,000	5,000
Ambient Temperature	°C	-32	-5	+20
Cruise Time	HR.	4.0	3.5	2.5

8994. What is the minimum torque required for takeoff under operating conditions No. 3, Table 3; according to the Takeoff Torque Chart? (See Figure 36.)

1—17,800 in./lb.
2—18,600 in./lb.
3—19,200 in./lb.
4—19,600 in./lb.

8995. What is the aircraft weight at the end of cruise under operating conditions No. 1, Table 4; according to the cruise chart? (See Figure 37.)

1—120,650 lb.
2—121,800 lb.
3—122,400 lb.
4—135,400 lb.

8996. What is the aircraft weight at the end of cruise under operating conditions No. 2, Table 4; according to the cruise chart? (See Figure 37.)

1—94,400 lb.
2—100,860 lb.
3—101,900 lb.
4—110,900 lb.

8997. What is the aircraft weight at the end of cruise under operating conditions No. 3, Table 4; according to the cruise chart? (See Figure 37.)

1—111,500 lb.
2—128,800 lb.
3—131,600 lb.
4—132,400 lb.

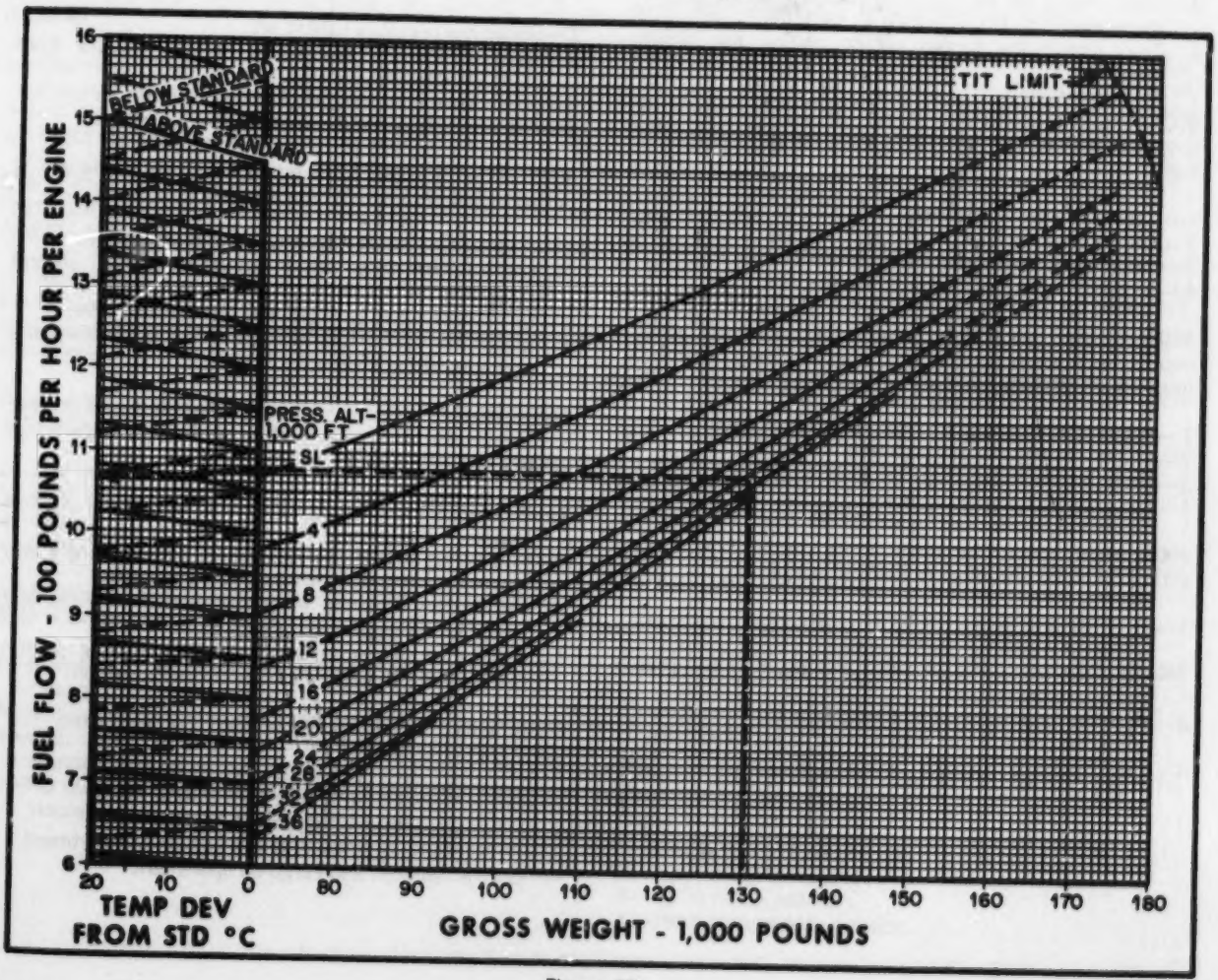


Figure 37

8998. What is the first procedure for a wing fire?

1—Close the wing isolation valve and engine bleed air valves for the engines on the affected wing.
2—Close all engine bleed valves.
3—Close the engine bleed valves only on the affected wing.
4—Side-slip the aircraft.

8999. Which precaution should be taken in the event of an overheated brake on the ground?

1—Approach the wheel well from the fore or aft only.
2—Use a hand CO_2 fire extinguisher for cooling.
3—Discharge the GTC fire extinguisher.
4—Evacuate the aircraft via the overhead escape hatches only.

9000. What should be done about electrical equipment not required to complete the smoke and fumes elimination procedure, if flammable fumes are present?

1—They should be turned off at the switch.
2—Their electrical cable should be disconnected.
3—They should not be turned on or off until fumes are eliminated.
4—They should be turned off by pulling the circuit breaker.

9001. Which procedure is proper for the elimination of smoke or fumes from the flight deck during pressurized flight?

1—Cabin differential pressure – increase to maximum.
2—Engine bleed air switches – maximum bleed.
3—Cabin altitude – increase at maximum rate.
4—Air conditioning master switch – aux vent.

9002. Which procedure should be used to help depressurize when it is necessary to eliminate smoke or fumes from the flight station?

1—Flight station emergency escape hatch – open.
2—Engine bleed air valves – closed.
3—Flight station clear vision window – open.
4—Wing isolation valves – closed.

9003. What should be done if an engine fire is not extinguished by discharge of the first bottle?

1—Push in and repull the fire emergency handle and press the discharge switch again.
2—Move the transfer switch to No. 2 position and press the discharge switch.
3—Push in and repull the fire emergency handle and move the bottle selector switch to the No. 2 position.
4—Hold the bottle selector switch in the position for the bottle which had not been fired.

9004. Which sequence should be used to discharge a fire extinguisher to an engine?

1—Pull the fire emergency control handle; actuate the bottle selector switch; press the agent discharge switch.
2—Actuate the bottle selector switch; press the agent discharge switch; pull the fire emergency control handle and hold out.
3—Pull the fire emergency control handle; move the agent discharge switch to the No. 1 or No. 2 position.
4—Move the agent discharge switch to the No. 1 position and hold for 30 seconds; pull the fire emergency control handle, an hold out for 30 seconds.

9005. What condition is necessary for arming an engine fire extinguisher?

1—A fire signal must be present.
2—The agent discharge switch must be pressed.
3—The warning cutout switch must be pressed.
4—The fire handle must be pulled.

9006. What is the indication that a fire-extinguisher bottle has been discharged from the flight compartment?

1—Bottle low pressure light is on.
2—Light in the fire emergency handle changes from steady to flashing.
3—Low pressure on the gauge at the extinguisher bottle.
4—Fire emergency handle being in the out position.

9007. When the GTC fire emergency control handle is pulled, which components are shut off?

1—Fuel control, oil shutoff valve, and bleed air valve.
2—Fuel shutoff valve, bleed air valve, and oil shutoff valve.
3—Oil shutoff valve, ignition, and fuel control valve.
4—Bleed air valve, fuel control, ATM generator, and hydraulic shutoff valve.

9008. Which action positions the fire-extinguisher directional control valves and arms the agent discharge switch?

1—Pulling an engine or GTC fire emergency control handle.
2—Pulling an engine fire emergency control handle and placing the switch in No. 1 or No. 2 position.
3—Pulling the GTC fire emergency control handle and pressing the agent discharge switch.
4—Pulling an engine or GTC fire emergency control handle and placing the switch in No. 1 position.

9009. Which areas are protected by the fixed fire-extinguisher system?

1—Engine zones 1, 2, 3, and ATM compartment.
2—GTC compartment and engine nacelle.
3—Wheel wells, engines, and gas turbine compartment.
4—Engine nacelles and cargo compartment.

9010. How is an engine hot section overheat condition indicated?

1—Illumination of the associated nacelle overheat warning light.
2—Steady illumination of the master warning light.
3—Steady light in the engine fire emergency handle.
4—Flashing red light in the engine fire emergency handle.

9011. Which warning will not activate the master fire warning light?

1—Nacelle overheat warning.
2—Turbine overheat warning.
3—Engine fire warning.
4—GTC fire warning.

9012. What procedure should be used prior to a gear up emergency landing?

1—Open the flightcrew door.
2—Dump fuel down to a 15-minute supply.
3—Close all engine bleed valves.
4—Place all oxygen regulators in 100 percent position.

9013. What exit should the flight engineer open prior to ditching?

1—Flightcrew door.
2—Forward overhead escape hatch.
3—Aft escape hatch.
4—Flight station hinged windows.

9014. What will cause the emergency exit lights to illuminate when their switches have been placed in the ARMED position?

1—Removing the light from its mounting fixture.
2—Loss of essential a.c. bus power.
3—Loss of battery bus and essential d.c. bus power.
4—A deceleration force exceeding a positive 1G.

9015. After parking and engine shutdown, the emergency exit lights control should be placed in which position?

1—Disarmed.
2—Extinguished.
3—Armed.
4—Test.

9016. What is the procedure for a propeller low oil light if RPM is within allowable limits?

1—Switch to mech gov and monitor engine operation closely.
2—Feather the propeller using the condition lever only.
3—Shut down the engine in accordance with the engine shutdown procedures.
4—No corrective action is required if the RPM remains stable.

9017. Which condition is indicated by illumination of the master propeller warning light on the engine instrument panel and an individual light on the copilot's side shelf?

1—Low propeller oil pressure.
2—Pitch-lock.
3—Low propeller oil quantity.
4—NTS operation.

9018. What action can be taken if a normal air-start cannot be accomplished because of failure of the propeller to rotate?

1—Increase airspeed by entering a dive.
2—Open the bleed air valve and use the starter.
3—Actuate the propeller brake emergency release.
4—Place the condition lever back to feather and then rapidly back to run.

9019. What should be done in the event of propeller malfunction during takeoff after V_1 speed?

1—Use full reverse on other engines and stop.
2—Select mech gov.
3—Select phase resync.
4—Press the propeller feather override switch.

9020. If the engine tends to overspeed, which unit in the Hamilton Standard turbopropeller will engage and prevent the engine from exceeding approximately 103 percent RPM?

1—Stop lock assembly.
2—Pitch-lock mechanism.
3—Fuel control governor.
4—Mechanical governor.

9021. Which is a feature of the propeller pitch-lock system?

1—It requires propeller oil pressure for engagement.
2—It prevents feathering but allows reverse pitch upon landing.
3—It prevents a decrease of blade angle but allows an increase of blade angle when engaged.
4—It cannot engage if the propeller is under control of the phase sync system.

9022. Which is an indication of proper NTS operation during a shutdown on the ground?

1—Automatic feathering of the propeller.
2—RPM cycling (alternately increasing and decreasing) while the switch is held.
3—Illumination of the BETA light.
4—Illumination of the NTS light.

9023. During normal climbing flight, where should the propeller controls be placed?

1—Phase synchronization on.
2—No. 1 master position.
3—BETA range position.
4—Temperature trim position.

9024. Which operations require the synchrophase master switch to be off?

1—Takeoff, approach, and landing.
2—Takeoff and climb.
3—Ground operation and turbulent air penetration.
4—Takeoff, climb, and landing.

9025. How should propeller reverse pitch operation be checked?

1—Static blade angle check before starting engines.
2—During taxi, pull each condition lever to feather in turn; return to run before an indication of 500 RPM drop.
3—After start, before taxi, place all throttles in reverse and observe a shift from high to low RPM.
4—During taxi, place pairs of symmetrical throttles in reverse and observe change of torque.

9026. How should the propeller feather check be made before the first flight of the day?

1—Engine operating in low-speed ground idle.
2—Engine operating in high-speed ground idle.
3—Engine stopped.
4—Throttle in flight idle position.

9027. Which precaution should be observed on the preflight operational check of the propeller anti-icing and deicing system?

1—Operation of the anti-icing and deicing system is not allowed on the ground.
2—Do not test propeller anti-icing and deicing for more than 2 minutes.
3—Immediately shut off deicing if ammeter indicates above 70 amps.
4—Do not operate for more than two cycles.

9028. Which is an indication of propeller ice protection system malfunction during the before takeoff check?

1—Blade deice ammeter below 65 amps.
2—Spinner anti-ice ammeter above 20 amps.
3—Anti-ice master switch light on.
4—Individual propeller anti-ice light does not illuminate in sequence.

9029. Which system protects the propeller blade leading edges and fairings from icing?

1—A 115V a.c. continuous current deicing system.
2—An electric anti-icing system.
3—Both anti-icing and deicing systems.
4—An electric deicing system.

9030. In the event of an engine failure between V_1 and V_2 speeds, where should the power lever (throttle) of the failed engine be placed?

1—In cutoff position immediately.
2—In BETA range position.
3—In flight idle.
4—At takeoff position.

9031. When is operation of the NTS feature checked?

1—During each engine start.
2—Prior to emergency feathering.
3—During engine runup prior to takeoff.
4—As a part of the engine shutdown procedure.

9032. What is a feature of the NTS system?

1—The system causes a propeller pitch change in response to a negative torque.
2—The system causes a propeller pitch change in response to a negative thrust.
3—Once initiated, the system causes full feathering.
4—If the system actuates on one propeller, the other propeller systems are locked out.

9033. Under which condition is the negative torque signal designed to operate if a powerplant failure occurs?

1—Any flight condition but not the BETA range.
2—Any flight operation in the BETA range.
3—All flight and ground operations.
4—Takeoff only if autofeather is armed.

9034. What action should be taken if a tachometer generator failure occurs on the engine selected as a master engine?

1—Place the propeller governor control switch to mech gov.
2—Place the synchrophase master switch to the unaffected master engine position.
3—Resync the propellers.
4—Follow the engine shutdown procedures.

9035. What takes place when the resynchrophase switch is held in resync and then released to normal?

1—Slave RPM's change continuously with the switch held in resync.
2—Slave RPM's change up to 5 percent with the switch held in resync.
3—Master RPM changes while the switch is held in resync; slave RPM's follow when the switch is returned to normal.
4—No change of RPM in resync; slave RPM's can change up to 5 percent when released to normal.

9036. What is the function of the propeller synchrophase system?

1—To maintain each slave engine propeller blade angle within 3° of master blade angle.
2—To set the blades of all propellers at an identical blade angle.
3—To maintain slave engine RPM within 3 percent of the master engine RPM.
4—To maintain a predetermined angular relationship between the blades of all four propellers as they rotate.

9037. When should the feather override button be manually actuated?

1—To complete feathering started by the NTS system.
2—During all normal unfeathering procedures.
3—To stop the feather (auxiliary) pump at completion of the feather cycle.
4—To override inadvertent placing of the condition lever to feather during flight.

9038. Which is an indication of proper operation during the air-start procedure?

1—Illumination of the feather override button light.
2—Automatic release of the feather override button.
3—Automatic release of the engine ground start switch.
4—Illumination of the NTS check light.

9039. Which is a reason for immediate engine shutdown in flight?

1—A sudden drop in engine oil pressure.
2—An indication of zero RPM.
3—A sudden turbine temperature rise during power increase.
4—An indication of zero turbine inlet temperature.

9040. Which is one way to unfeather the propeller?

1—Hold the condition lever in air-start.
2—Advance the throttle levers.
3—Move the condition lever to run.
4—Pull the propeller feather override switch.

9041. Which event is associated with a condition lever position?

1—Lever in ground stop – propeller pitch moves to full reverse.
2—Lever in air-start – feather button moves to unfeather.
3—Lever in feather – feather override button pulls in.
4—Lever in run – propeller pitch moves to flight idle.

9042. What switch position removes all electrical signals from the propeller control system?

1—Synchrophase master switch – off.
2—Governor control switch – mech gov.
3—Prop resynchrophase switch – normal.
4—Feather override button – in.

9043. What control setting is required to allow throttle movement to adjust propeller blade angle during normal cruising flight (anticipation system)?

1—Prop resynchrophase switch – normal.
2—Prop resynchrophase switch – resync.
3—Prop governor control switch – mech gov.
4—Prop governor control switch – normal.

9044. What blade angle will be attained by the propeller when reverse thrust is used during the landing roll?

1—Against the full reverse pitch stop.
2—A blade angle determined by power lever position.
3—Against the flight idle low-pitch stop.
4—A blade angle determined by the propeller governor spring tension.

9045. What is the comparison between propeller blade angles in low-speed and high-speed ranges at a given power lever (throttle) position?

1—Identical for low and high speed; regardless of all other variables.
2—Relatively high for the low-speed range, and low for the high-speed range.
3—Relatively high for the high-speed range, and low for the low-speed range.
4—Ground idle low pitch for low-speed range; flight idle low-pitch stop for high-speed range.

9046. During flight, the torque, TIT, and fuel flow are near zero; power section oil pressure is low; hydraulic pressure, a.c. generator, RPM and gearbox oil pressures are normal. Which condition is indicated by these clues?

1—Gearbox failure.
2—In-flight decoupling of the gearbox.
3—Single phase power failure.
4—Stepdown transformer failure.

9047. What causes the safety coupling to disengage?

1—A reverse propeller blade angle during flight.
2—A negative torque of more than 6,000 in./lb.
3—Operation of the NTS system.
4—Reduction gearbox oil pressure.

9048. What are the instrument indications of a decoupled propeller reduction gearbox?

1—High RPM, low fuel flow, low TIT, low torque (HP).
2—Low RPM, low fuel flow, low TIT, negative torque (HP).
3—Normal RPM, high fuel flow, high TIT, low torque (HP).
4—Normal RPM, low fuel flow, low TIT, low torque (HP).

9049. Which type of malfunction may cause the reduction gear section to decouple from the power section of the engine?

1—Loss of reduction gear section oil pressure.
2—Flame-out when autofeather is not armed.
3—Reverse rotation of the propeller after feathering.
4—Propeller driving the engine and NTS failure.

9050. If an engine has been shut down for a fire or nacelle overheat, one fire-extinguisher agent has been discharged and the indication persists, what is the next procedure?

1—Discharge the remaining fire extinguisher.
2—Isolate the wing by closing the wing isolation valve and engine bleed valve for the other engine.
3—Recycle the fire-emergency control handles.
4—Isolate the manifold by placing all the bleed air valve switches to off.

9051. During the procedure for an engine in-flight fire, which is the first action which shuts off the fuel?

1—Engine condition lever – FEATHER.
2—Fuel boost pump switch – OFF.
3—Fire-emergency control handle – PULL.
4—Fire extinguisher – DISCHARGE.

9052. What is the procedure in the event of an engine turbine overheat warning light illuminating in flight?

1—Retard throttle toward flight idle. If overheat condition persists, follow the engine shutdown procedures.
2—Reduce power with throttles, TD switch to null. If warning light persists, follow the engine shutdown procedures.
3—Fire-emergency control handle – pull; fire-extinguisher agent – discharge; follow the engine clean-up checklist.
4—Place throttle in flight idle and TD switch to null. If warning light persists, but oil pressure is normal, resume normal operation.

9053. What is the first step in the procedure for in-flight engine over-temperature indicated by high TIT?

1—Fire-emergency control handle – pull.
2—Temperature datum control switch – null.
3—Throttle – retard toward flight idle.
4—Engine condition lever – feather.

9054. If a low-speed, ground idle button is popped out by throttle movement, what action is required?

1—Leave the throttle at that position until RPM stabilizes on speed.
2—Reset the low-speed ground idle button.
3—Return the throttle to ground idle.
4—Move the condition lever to ground stop.

9055. What is the indication of a locked propeller brake during air-start?

1—Failure of the propeller to rotate only.
2—Illumination of the NTS light and failure of the propeller to rotate.
3—Illumination of the low oil quantity light and failure of the propeller to rotate.
4—The air-start circuit breaker will pop and the propeller will slowly rotate counterclockwise.

9056. If NTS is not indicated during an air-start, and light-off has occurred, what is the correct procedure?

1—Discontinue the start with the condition lever.
2—Discontinue the start with the fire-emergency control handle only.
3—Allow the start to continue until the engine is on speed.
4—Follow the engine shutdown procedure immediately.

9057. Which action should be taken if NTS is not indicated by 10 percent RPM on an air-start (no light- off)?

1—Place the condition lever to ground stop.
2—Place the condition lever to feather.
3—Allow the start to continue until the engine is on speed.
4—Discontinue the start with the fire emergency control handle only.

9058. Before making an air-start what is the maximum TIT for the affected engine?

1—100° C.
2—125° C.
3—200° C.
4—250° C.

9059. During an air-start, the engine condition lever should be positioned to air-start until which condition is attained?

1—20 percent RPM.
2—Light-off.
3—35 percent RPM.
4—40 percent RPM.

9060. During an air-start procedure, it is noted that the RPM has increased to over 40 percent and there has been no indication of a light-off. What should be done in this event?

1—Return the condition lever to feather.
2—Place ignition switch to inflight.
3—Pull the fire emergency control handle.
4—Return the throttle to flight idle.

9061. An engine has been shut down and later, a requirement arises for the use of that engine's power. Which of the following is always correct concerning the decision of whether or not to restart that engine?

1—Do not restart an engine that has been shut down due to fire or fire warning.
2—Do not restart if the EGT has dropped to ambient.
3—The engine may be restarted if it is windmilling within the air-start range.
4—The engine may be restarted but is limited to 5 minutes' operation.

9062. Which condition is a requirement for an air–start?

1—The TIT must be below 200° C.
2—The NTS system must be inoperative.
3—The throttle must be in the BETA range.
4—The engine condition lever must be held in air–start until the RPM reaches 100 percent.

9063. How should engine lubrication be re–established if all attempts to stop rotation of a feathered propeller fail and there is no indication of a fire?

1—Oil cooler flap switch – open.
2—Condition lever – air–start.
3—Oil firewall shutoff valve switch – open.
4—Fire emergency control handle – reset.

9064. In accomplishing an engine air–start, where should the power lever be placed?

1—BETA range.
2—Ground idle.
3—Flight idle range.
4—Idle cutoff.

9065. The tachometer generator for one engine is inoperative. The MEL may allow flight if RPM can be determined by other means. Which would be an accurate indication of engine RPM?

1—Fuel flow.
2—Turbine inlet temperature.
3—Propeller beat during synchrophase operation.
4—Generator frequency.

9066. If in cruise flight a complete a.c. electrical failure occurs, which instrument will still function?

1—Engine fuel pressure.
2—TIT.
3—Fuel flow.
4—RPM.

9067. An engine must be shut down because of an uncontrollable rise in turbine inlet temperature. Which action should be taken in the shutdown procedure?

1—Propeller control – feather.
2—Throttle – flight idle.
3—Engine condition lever – feather.
4—Throttle – BETA range.

9068. What may be the result of placing the throttle below flight idle while in flight?

1—Propeller going to feather.
2—Fuel control shutoff valve closing.
3—Engine controls binding.
4—Immediate loss of control of the airplane.

9069. What action should be taken if flames spread beyond the tailpipe during engine start?

1—Place the engine condition lever to ground stop.
2—Pull the starter switch.
3—Place the engine condition lever to feather.
4—Follow the engine shutdown procedure.

9070. Which actions should be taken if an engine start is discontinued because of no oil pressure?

1—Close the engine bleed air switch and pull the starter button.
2—Move the condition lever to ground stop and pull the starter button.
3—Pull the fire–emergency control handle and close the engine bleed air switch.
4—Move the condition lever to ground stop and pull the emergency shutdown handle.

9071. Which action should be taken if there is excessive tailpipe torching during a ground start attempt?

1—Place the condition lever in ground stop and continue motoring with the starter.
2—Discontinue the start and use the engine fire–extinguishing system.
3—Pull the fire control handle and continue motoring with the starter.
4—Advance the throttle, turn off the fuel booster pump, continue the start.

9072. What are the normal in–flight RPM limits?

1—94 – 100 percent.
2—96.5 – 105 percent.
3—98 – 102 percent.
4—98 – 103 percent.

9073. During normal operation, how is the engine shut down?

1—Stopping fuel flow at the firewall shutoff.
2—Interrupting current in the ignition system.
3—Stopping fuel flow at the fuel control.
4—Stopping fuel flow at the tank valve.

9074. When a takeoff is made under high ambient temperature conditions, which engine limit is most likely to be exceeded?

1—RPM – over 102 percent.
2—Torque – over 19,600 in./lb.
3—TIT – over 977° C.
4—Oil temperature – over 100° C.

9075. Which condition is acceptable during low–speed ground idle operation?

1—ATM and ATM generator off.
2—Engine RPM – 55 to 66 percent.
3—Fuel pump failure warning light illuminated.
4—Low oil pressure warning light illuminated.

9076. Which condition is required to obtain low-speed operation?

1—Condition lever in ground idle detent.
2—Temperature datum system in null.
3—Throttle position between 9° and 30°.
4—Fuel enrichment switches normal.

9077. During start, the engine should normally be on speed by what period of time?

1—35 seconds.
2—40 seconds.
3—45 seconds.
4—60 seconds.

9078. How should the engine controls be set to adjust the propeller blade angle for an engine start on the ground?

1—Condition lever – air start.
2—Throttle – ground start.
3—Condition lever – ground stop.
4—Throttle – flight idle.

9079. The reduction gear ratio is 13.54:1 and the propeller RPM is 1,032. What is the compressor RPM?

1—6,987 RPM.
2—13,973 RPM.
3—15,250 RPM.
4—66,368 RPM.

9080. The reduction gear ratio is 13.54:1 and the compressor RPM is 13,820. What is the propeller RPM?

1—102 RPM.
2—980 RPM.
3—1,020 RPM.
4—1,863 RPM.

9081. What are the engine starter limits?

1—1 minute on, 1 minute off, 1 minute on, 30 minutes off.
2—1 minute on, 1 minute off, not to exceed 2 minutes operation in any 30-minute period.
3—1 minute on, 1 minute off, 1 minute on, 1 minute off, 1 minute on, 30 minutes off.
4—1 minute on, 1 minute off, 1 minute on, 5 minutes off, 1 minute on, 60 minutes off.

9082. During engine start, the starter button should pop out by the time the tachometer reaches which indication?

1—10 percent RPM.
2—35 percent RPM.
3—66 percent RPM.
4—90 percent RPM.

9083. What is the minimum reduction gearbox oil pressure in low-speed ground idle?

1—50 PSI.
2—100 PSI.
3—130 PSI.
4—250 PSI.

9084. What is the maximum continuous oil temperature in reverse range?

1—60° C.
2—85° C.
3—95° C for a maximum of 30 minutes.
4—100° C.

9085. Which is an oil temperature limit?

1—Maximum before takeoff – 100° C.
2—Minimum for ground runup – 15° C.
3—Minimum for cruise – 65° C.
4—Maximum at rated power – 100° C.

9086. During engine start, there must be a positive indication of engine oil pressure by the time the tachometer reaches which indication?

1—10 percent RPM.
2—35 percent RPM.
3—50 percent RPM.
4—66 percent RPM.

9087. Which flight deck indications provide information for the crew regarding lubrication system operation?

A. Engine oil inlet temperature
B. Engine oil outlet temperature
C. Gearbox oil pressure
D. Power section oil pressure
E. Oil tank quantity
F. Gearbox oil quantity

1—A, C, D, and E only.
2—B, C, D, and E only.
3—B, D, and F only.
4—A, B, C, D, E, and F.

9088. When does the fuel control governor start limiting RPM?

1—At and above 103.5 percent RPM.
2—During low-speed operations.
3—When the propeller governor is locked.
4—When the NTS system operates.

9089. What is a function of the temperature datum system in automatic (normal) position?

1—Provide temperature limiting during BETA operation.
2—Shut off fuel when the propeller is feathered.
3—Provide temperature controlling during low speed ground idle.
4—Provide a constant fuel flow when TIT varies.

9090. Which type operation is available when the temperature datum control system is locked?

1—Temperature controlling and temperature limiting.
2—Temperature limiting in low RPM; temperature controlling in high RPM.
3—Temperature limiting but not temperature controlling.
4—Temperature controlling but not temperature limiting.

9091. When will the secondary fuel pump pressure light be illuminated?

1—During engine starting (16 percent to 65 percent RPM) to indicate secondary pump failure.
2—During normal engine operation (above 65 percent RPM) to indicate primary pump failure.
3—Anytime there is a secondary fuel pump failure.
4—Anytime there is a primary fuel pump failure.

9092. Where is fuel flow to the engine stopped when the engine fire emergency control handle is pulled?

1—At the fuel control only.
2—At the firewall only.
3—At the fuel tank valve, fuel control, and firewall.
4—At the fuel control and firewall only.

9093. What does the torquemeter system measure?

1—Difference between compressor inlet pressure and turbine outlet pressure.
2—Axial movement of the prop shaft.
3—Twist of the helical spline ring gear.
4—Twist of the extension shaft.

9094. What causes turboprop engine compressor stall?

1—Insufficient fuel flow during acceleration.
2—Excessive EPR for the particular RPM.
3—Back flow of air from the combustion chambers.
4—Excessive angle of attack on the compressor blades.

9095. Which formula indicates the power output (neglecting propeller losses) of a turboprop engine?

1—Shaft horsepower + jet thrust (lb.) = total horsepower.
2—Shaft horsepower + jet horsepower = total equivalent shaft horsepower.
3—Equivalent shaft horsepower + jet horsepower = shaft horsepower.
4—Equivalent shaft horsepower + jet thrust (lb.) = shaft horsepower.

9096. Which function or system is controlled by the 5th– and 10th–stage compressor air bleed valves?

1—Engine bleed air to the anti–icing system.
2—Engine bleed air to the starting system.
3—Compressor unloading during starting and low RPM operations.
4—Compressor air for cabin pressurization.

9097. Which part(s) of the bleed air (pneumatic) system is(are) operated when a fire emergency handle is pulled?

1—Wing anti–icing valves and wing bleed air isolation valve.
2—Engine air inlet scoop anti–icing valve only.
3—Engine bleed air valve and wing bleed air isolation valve.
4—Engine bleed air valves only.

9098. How are the wing bleed air isolation valves operated?

1—Opened and closed manually.
2—Opened and closed electromechanically.
3—Opened electromechanically.
4—Opened manually.

9099. Which units or systems operate on heat from the bleed air (pneumatic) system?

1—Leading edge anti–icing and engine starters.
2—Refrigeration units and radome anti–icing system.
3—Engine scoop anti–icing and empennage anti–icing.
4—Cockpit heat system and propeller anti–icing system.

9100. What is indicated if bleed pressure does not drop during a bleed pressure decay check?

1—Engine bleed pressure is too high.
2—Wing bleed air isolation valve is leaking.
3—Engine bleed air valve is leaking.
4—Air is trapped between the two wing bleed air isolation valves.

9101. Which sources may supply the bleed air (pneumatic) system?

1—Engine compressor, gas turbine compressor, or external pressure source.
2—Engine 14th–stage bleed manifold and the GTC only.
3—Engine 14th–stage bleed manifold and the ATM only.
4—Engine turbine stage, external pressure source, or APU compressor.

9102. What is a feature of the engine bleed air valves?

1—Electric motor operated valves.
2—Allow airflow only from engine to pneumatic system.
3—Allow airflow only from pneumatic system to engine.
4—Pressure actuated, solenoid controlled valves.

9103. Which is a feature of the cockpit voice recorder?

1—The airplane must be on the ground to completely erase the tape.
2—The last 1 hour of recording is retained on the tape.
3—The tape automatically erases when external electrical power is connected to the airplane system.
4—To test the recorder, press the monitor button and listen to the recording for 5 seconds.

9104. What procedure must be followed if both the inner and outer panes of the windshield crack during flight?

1—The cabin differential pressure must be reduced to 10" Hg. or less.
2—The cabin differential pressure must be reduced to zero.
3—The cabin altitude must be reduced to sea level.
4—An emergency descent and immediate landing must be accomplished.

9105. What is indicated by illumination of a leading edge over-temperature warning light?

1—Overheat of the bleed air inside the anti-icing duct.
2—Smoke or fire in the particular leading edge segment.
3—Overheat of the leading edge skin.
4—Hot air leaking from an anti-icing duct in the wing.

9106. Which condition lever(s) must be in the RUN position to energize the ice detector system?

1—No. 1 or 4.
2—No. 2 or 3.
3—All four engines.
4—Any one engine.

9107. Which condition is required for proper operation of the ice detection system?

1—Prop and engine anti-ice master switch – reset.
2—Ice accumulation at the stall warning system transmitter.
3—Prop or engine inlet anti-icing switches – auto.
4—Engine No. 2 or 3 operating.

9108. Which selection should be made for the airfoil anti-icing system during a takeoff in freezing rain?

1—System should be on to prevent possible freezing of flap retraction mechanism.
2—System should be on to prevent loss of lift due to frost formation.
3—System should be off to prevent engine horsepower loss.
4—System should be off to prevent reduction of heated air available to the engine anti-icing system.

9109. How can engine A/I (anti-icing) system hot air be immediately obtained?

1—Prop and engine A/I master – manual; engine inlet A/I switch – auto.
2—Prop and engine A/I master – manual; engine inlet A/I switch – on.
3—Engine inlet A/I switch – on; engine bleed air switch – on.
4—Prop and engine A/I master – auto; engine inlet A/I switch – auto; engine bleed air switch – on.

9110. Which action should be taken to extinguish the ice detector no ice light?

1—Place the engine inlet A/I switch to off.
2—Place the prop and engine A/I master switch to auto.
3—Place the prop and engine A/I master switch to reset.
4—Place the engine inlet A/I switch to on.

9111. When the engine inlet anti-icing system is switched on or off, there should be a positive indication on the

1—tachometer.
2—pneumatic duct pressure gauge.
3—torquemeter.
4—ammeter.

9112. What restriction is placed on the use of leading edge anti-icing system during ground operation?

1—Do not turn on the anti-icing system on the ground.
2—Limit ground testing to no more than 30 seconds.
3—Wing anti-icing can be tested on the ground but the empennage system cannot be tested.
4—During icing conditions the system should be placed on only while the airplane is taxiing.

9113. How is the airfoil anti-icing system normally operated during icing conditions?

1—Wing and tail systems turned on periodically to remove accumulated ice.
2—Wing and tail systems turned on alternately to prevent shedded wing ice damaging tail surfaces.
3—Wing system on after ice accumulates; tail system on continuously to prevent ice accumulation.
4—Wing and tail systems continuously on during flight.

9114. Which is a feature of the radome anti-icing system?

1—The system will automatically come on with the switch in manual when ice accumulates on the aircraft.
2—Ground operation of the system is not permitted.
3—Electric heating elements automatically come on if the switch is in auto, prop anti-ice is in auto, and ice is detected.
4—An overheat condition is indicated by illumination of the radome warning annunciator.

9115. Which systems are anti-iced by electric power?

1—Windshield, props, pitot tubes, and angle of attack transmitter.
2—Radome, windshield, props, pitot tubes, and static ports.
3—Engine inlet scoops, windshield, and pitot/static probes.
4—Radome, angle of attack transmitter, windshield, and props.

9116. Which indicators should be monitored while using the airfoil anti–icing system?

1—Leading edge temperature indicators and over–temperature warning lights.
2—Airfoil temperature indicators and anti–icing ammeter.
3—Over–temperature warning lights and cycling lights.
4—Deicing ammeters, wing and empennage temperature indicators, and over–temperature warning lights.

9117. What action should be taken if ice is forming on the windshield when the heating system is on?

1—Hold the cold–start switches on.
2—Place the windshield heat switches in high.
3—Place the defogging switch on.
4—Actuate the windshield wipers.

9118. Which action should be taken to start the windshield heat when very cold (−43° C or less) conditions exist?

1—Place the windshield heat switch in normal and cycle the cold start switch 5 seconds on and 10 seconds off.
2—Place the windshield heat switch in high until the system cycles off, then place the switch in normal.
3—Place the windshield heat switch in high, and cycle the cold start switch 10 seconds on and 5 seconds off.
4—Place the windshield heat switch in high until windshield temperature reaches 10° C; then place in normal.

9119. How is the stall warning transmitter deicing system actuated?

1—Automatically when d.c. power is available.
2—Placing the pilot's pitot heat switch on.
3—Placing the copilot's pitot heat switch on.
4—Placing the angle of attack transmitter heat switch on.

9120. How should the pitot heat switches be used?

1—Saftied on at all times.
2—Off for all ground operations except systems operation check.
3—On from before takeoff check to after landing check.
4—Off unless visible moisture is present.

9121. Which is a source of heat in the engine anti–icing system?

1—Compressor section hot air for the engine's own inlet guide vanes.
2—Compressor section hot air for the engine's own inlet scoop.
3—Bleed air system hot air for the engine's inlet guide vanes.
4—Bleed air system hot air for the engine's extension shaft housing.

9122. What type system is used for control of ice on the wing leading edges?

1—Bleed air deicing system.
2—Anti–icing using heated air from the bleed air system.
3—Electric anti–icing using the alternating current system.
4—Inflated boot–type deicing system.

9123. Which empennage area temperature indications are combined on one temperature gauge?

1—Right and left horizontal stabilizers.
2—Upper and lower vertical fins.
3—Right horizontal stabilizer and vertical fin base.
4—Right horizontal stabilizer and vertical fin tip.

9124. What means is used to control temperature of the wing and empennage leading edges?

1—Automatic modulation of the engine bleed valves.
2—Temperature selector control in the cockpit.
3—Automatic cycling of the wing isolation valves by thermo–switches.
4—Automatic cycling of the anti–icing shutoff valves by thermo–switches.

9125. What is the procedure for brake failure during taxi?

1—Brake selector switch on, aux hydraulic pump on.
2—Aux hydraulic pump on, brake selector switch – emergency.
3—ATM and generator on, brake selector switch – emergency.
4—ATM on, brake selector switch – emergency.

9126. Which items may be lowered by rotating an emergency handcrank?

1—All landing gear and flaps.
2—Main and nose landing gear.
3—Right and left main landing gear.
4—Nose landing gear and flaps.

9127. How should the nose landing gear be operated if it does not extend by the normal method?

1—Use the emergency handcrank.
2—Move the NLG emergency extension valve handle to emergency and pull the nose gear emergency release.
3—Place the landing gear lever down and operate the electric motor–driven hydraulic pump.
4—Move the NLG emergency extension valve handle to emergency and operate either one of the auxiliary system pumps.

9128. What action must be taken before using the emergency extension wrench to manually extend the main landing gear?

1—Actuate the emergency engaging T–handles.
2—Remove the pressure sealed doors.
3—Build up pressure in the utility system.
4—Actuate the auxiliary hydraulic system pump.

9129. What method is used to lower the main landing gear if normal hydraulic pressure to the gear is lost?

1—Use the auxiliary system hand pump.
2—Move the landing gear lever to emergency down and allow the gear to free–fall.
3—Pull the emergency engaging handles and use the handcrank.
4—Press the down button on the landing gear selector valve.

9130. Which action should be taken if the utility hydraulic system pressure is high, above 3,500 PSI?

1—Place both utility pump switches off.
2—Place the utility suction boost pump switch off.
3—Determine the faulty pump and place its pump switch off.
4—Shut down the engine after the faulty pump has been identified.

9131. What is the effect if the hydraulic suction boost pump is turned off during flight?

1—The associated system will lose all pressure.
2—The reservoir will overfill and vent into the cargo compartment.
3—The associated system pressure will be lowered by 100 – 200 PSI.
4—Hydraulic fluid temperature will increase.

9132. What condition causes illumination of the engine–driven hydraulic pump light?

1—Pump switch off.
2—Pump output pressure 2,000 PSI or below.
3—Suction boost pump switch off.
4—Suction boost pump output pressure 10 PSI or below.

9133. What is the source of power to open the aft cargo door and ramp?

1—Auxiliary system pressure or manual crank.
2—Electric motor–driven pump or manual crank.
3—A.C. electric motors.
4—Electric motor–driven hydraulic pump or a hand pump.

9134. Which statement is true concerning the hydraulic system?

1—The auxiliary hydraulic system can supply fluid to the emergency brake system with normal antiskid protection.
2—Normal hydraulic system operating pressure is 3,000 – 3,550 PSI.
3—The suction boost pumps must be on before starting the engines.
4—The auxiliary hydraulic system can supply fluid for emergency flap extension in flight.

9135. Which is a feature of the nosewheel steering system?

1—Steering power is available from the utility system only.
2—If the gear has been extended by auxiliary pressure, limited steering is available.
3—Power steering can be used to turn the nosewheel 78° right or left of center.
4—Shimmy damping is accomplished by the centering cam.

9136. Which is an indication of proper antiskid operation?

1—Gear down approach lights out; touchdown lights out.
2—Gear down approach lights out; touchdown lights on.
3—Gear down approach lights on; touchdown lights out.
4—Gear down approach lights on; touchdown lights on.

9137. What is the effect of setting the parking brake with the antiskid switch on?

1—The parking brakes will not hold.
2—If the parked wheel skids on ice or snow, the brake will release.
3—The antiskid system will be de–energized.
4—Brake accumulator pressure will drop to zero.

9138. Which is an indication of a normal antiskid test?

1—Test switch fwd; left and right forward test lights on until test switch released.
2—Test switch on; antiskid inoperative light on.
3—Test switch on; antiskid inoperative light off.
4—Test switch fwd; left and right forward test light momentarily on after the switch is released.

9139. Which indication is shown on the normal brake pressure gauge?

1—Same as that shown on the utility system pressure gauge.
2—Same as that shown on the auxiliary system pressure gauge.
3—Pressure at the antiskid valve.
4—Pressure at the brake.

9140. Which sources supply pressure for operation of the hydraulic brakes?

1—Utility and auxiliary systems.
2—Utility system and the air bottle.
3—Normal brake accumulator and booster brake accumulator.
4—Auxiliary system hand pump or electric pump only.

9141. If hydraulic system pressure is 3,000 PSI and accumulator preload is 1,500 PSI, what is the accumulator air pressure when the system is pressurized?

1—1,500 PSI.
2—2,000 PSI.
3—3,000 PSI.
4—4,500 PSI.

9142. Which is a feature of the landing gear mechanism?

1—The nose gear uplock is normally released by a cable–operated device.
2—The main gear retraction system uses four hydraulic motor and jackscrew assemblies.
3—The nose gear retraction system uses one hydraulic motor.
4—The main gear uplocks are hydraulic brake devices.

9143. What mechanism is used to retract the main landing gear?

1—Hydraulic cylinders retract the gear upward and forward.
2—Hydraulic motors retract the gear upward and forward.
3—Hydraulic motors retract the gear straight upward.
4—Hydraulic cylinders retract the gear straight upward.

9144. Which pumps supply pressure for the utility hydraulic system?

1—Nos. 1 and 2 engine–driven hydraulic pumps.
2—Nos. 3 and 4 engine–driven hydraulic pumps.
3—The electric motor–driven pumps.
4—Two engine–driven pumps with a hand pump to provide emergency operation.

9145. Which systems are operated by the booster hydraulic system?

1—Flight controls.
2—Flap motors.
3—Nose landing gear emergency extension.
4—Emergency brakes.

9146. Which component is operated by the utility hydraulic system?

1—Aft cargo door and ramp.
2—Emergency brakes.
3—Wing flap motor.
4—Main gear emergency extension system.

9147. Which hydraulic system incorporates a cooler?

1—Utility system cooler located in No. 2 fuel tank.
2—Booster system cooler located in No. 3 fuel tank.
3—Auxiliary system cooler located in No. 3 fuel tank.
4—Auxiliary system cooler located in cargo compartment.

9148. What is the function of the hydraulic suction boost pump?

1—Provides pressure to return fluid to the reservoir.
2—Provides fluid under pressure to the engine–driven pumps.
3—Acts as a backup pressure source in event of an engine pump failure.
4—Maintains a level of fluid in the reservoir to prevent engine pump cavitation.

9149. Which control(s) can close the shutoff valve on the outlet of an engine–driven pump?

1—Engine pump switch and fire emergency handle.
2—Engine pump switch and suction boost pump switch.
3—Engine pump switch only.
4—Fire emergency switch only.

9150. Where are the variable volume pumps for the utility hydraulic system located?

1—Engines Nos. 1 and 2.
2—Cargo compartment.
3—Engines Nos. 2 and 3.
4—Two on the engines and one in the cargo compartment.

9151. Where are the pumps for the booster hydraulic system located?

1—Engines Nos. 2 and 3.
2—Engine–driven pumps on engines Nos. 3 and 4; electric motor–driven pump in cargo compartment.
3—Electric pump and hand pump in cargo compartment.
4—Variable volume pumps driven by engines Nos. 3 and 4; hydraulic motor–driven pump in cargo compartment.

9152. Where can the pressure output of the hydraulic hand pump be determined?

1—The flight deck auxiliary system pressure gauge only.
2—Normal brake pressure gauge.
3—The cargo compartment auxiliary system pressure gauge only.
4—Both auxiliary system pressure gauges.

9153. Which hydraulic pump does not have an associated warning light to indicate low–pressure output?

1—Utility system suction boost pump.
2—Auxiliary system pump.
3—Booster system engine–driven pump.
4—Booster system suction boost pump.

9154. Which sequence should be followed to dump fuel?

1—Boost pump – on; dump switch – dump; boost pump – off; dump switch – normal.
2—Dump switch – dump; dump switch – drain; dump switch – normal.
3—Dump switch – dump; dump switch – normal.
4—Boost pump – on; dump switch – dump; dump switch – off; boost pump – off.

9155. Which precaution should be observed during the fuel dumping procedure?

1—Tank–to–engine fuel configuration.
2—All electrical systems off.
3—Bleed air system off.
4—Fuel boost pumps and dump pumps off.

9156. Which action should be taken if the dump valve of an auxiliary tank does not open when the fuel level must be reduced rapidly?

1—Use cross-feed procedures to feed fuel to all four engines from the auxiliary tank.
2—Place the bypass switch open and the external tank dump switch to dump.
3—Transfer the fuel to the external tank and dump the excess through the external tank dump system.
4—Place the cross-feed valves for the auxiliary and external tank open and the external tank dump switch to dump.

9157. What happens in the fuel system when an engine fire emergency handle is pulled?

1—The cable-operated fire emergency valve is closed.
2—The boost pump is deactivated and tank valve is closed.
3—The fire emergency and cross-feed valves for the engine are closed.
4—The electric-motor-operated firewall shutoff valve is closed.

9158. When does boost pump failure during rapid climb cause a gradual loss of power on the engine?

1—At any altitude.
2—Above 5,000 ft.
3—Between 5,000 and 10,000 ft.
4—Between 12,000 and 20,000 ft.

9159. What action should be taken if a fuel boost pump failure occurs?

1—Leave pump switch on to assure scavenge pump operation.
2—Cross-feed fuel from another tank for the remainder of the flight.
3—Pull the associated circuit breakers and turn off the pump switch.
4—Dump fuel from the tank to prevent a lateral unbalance.

9160. When is the bypass valve switch used?

1—When transferring fuel from external to main tanks.
2—When feeding an engine from two tanks at a time.
3—When an external or auxiliary boost pump has failed.
4—When an external or auxiliary cross-feed valve has failed.

9161. What is the effect of failure of a main tank fuel boost pump?

1—The engine cannot be operated in cruising flight above 12,000 ft. because of air in the fuel.
2—Fuel cannot be drawn from the tank to feed the associated engine.
3—Fuel cannot be dumped from the tank.
4—Fuel cannot be cross-fed from the tank to another engine.

9162. Which is an indication of fuel boost pump failure?

1—Main tank pump – tank low-level light on.
2—Auxiliary tank pump – tank empty light on.
3—External tank pump – low-pressure warning light on.
4—Main or auxiliary tank pump – scavenge flow light on.

9163. What will be indicated when there is a power failure to one fuel tank quantity gauge?

1—The gauge reading will immediately drop to zero.
2—The gauge reading will drop to zero when the test switch is pressed.
3—The totalizer reading will not include the quantity shown on the inoperative tank gauge.
4—The totalizer reading will drop to zero when the tank gauge drops to zero.

9164. Which conditions are required before the auxiliary tank empty light will illuminate when the tank fuel level is depleted?

1—Auxiliary tank cross-feed and pump switches on.
2—Auxiliary tank pump switch on and cross-feed separation valve closed.
3—Bypass switch and cross-feed separation switch open.
4—Auxiliary tank pump switch, cross-feed switch, and bypass switch on.

9165. What action should be taken to prevent spilling auxiliary fuel out the vent system during taxiing?

1—Auxiliary tank boost pump off.
2—Auxiliary tank cross-feed valves open.
3—Auxiliary tank cross-feed valves closed.
4—Auxiliary tank boost pumps on.

9166. Which is a normal indication when checking the boost pumps by using the fuel pressure indicators?

1—Main pump pressure 15 – 24 PSI.
2—Main or auxiliary pump pressure 28 – 40 PSI.
3—External pump pressure 15 – 24 PSI.
4—Main or external pump pressure 28 – 40 PSI.

9167. What control settings are required if the cross-feed valves are open during descent and landing?

1—Main tank pumps on and cross-feed separation closed.
2—Cross-feed primer switches on.
3—Auxiliary tank boost pumps on.
4—Main tank pumps off, auxiliary or external tank pumps on, and cross-feed separation closed.

9168. Which fuel tank load distribution is permissible in flight?

1—Right wing main tank fuel 3,000 lb. more than left wing main tank fuel.
2—Inboard fuel 1,000 lb. more than outboard fuel.
3—Outboard fuel 1,000 lb. more than inboard fuel.
4—Left auxiliary full, right auxiliary empty; balanced by left external empty, right external full.

9169. Which is a requirement of the normal fuel management procedure?

1—Takeoff and landing – main or auxiliary tanks.
2—Climb, cruise, and descent – external auxiliary and main tanks.
3—Climb, cruise, and descent – main tanks only.
4—Takeoff and landing – main tanks only.

9170. Which fuel system setting is required for takeoff?

1—All boost pumps on.
2—Cross-feed separation valve open.
3—Auxiliary and external tank bypass open.
4—All cross-feed valves closed.

9171. Which fuel tanks contain dump pumps?

1—External tanks.
2—Auxiliary tanks.
3—Main tanks.
4—Vent tanks.

9172. What signal indicates proper flight recorder operation prior to takeoff?

1—Amber light out.
2—Green light on.
3—Audio tone on.
4—Meter indicating in normal range.

9173. What is the relationship between true outside air temperature and indicated outside air temperature in cruising flight at high altitudes?

1—Indicated temperature is lower than true temperature.
2—Indicated temperature is higher than true temperature.
3—The difference between indicated and true temperature is greatest at low airspeeds.
4—The difference between indicated and true temperature is greatest at low altitudes.

9174. Which is a feature of the airspeed limit system?

1—The warning is cut out if the captain's pitot/static switches are turned off.
2—The limiting Mach number decreases above 17,000 ft.
3—The limiting airspeed CAS increases slightly from sea level up to 17,000 ft.
4—The warning can be cut out by depressing the alarm bell cutout switch.

9175. Exceeding the V_{MO} airspeed limit is indicated by

1—an aural alarm system.
2—the stick shaker system.
3—a visual warning signal.
4—a decrease in propeller RPM.

9176. Which action starts the flight recorder?

1—ATM generator turned on with GTC operating.
2—Battery switch turned on.
3—Ground power or ATM generator removed from bus.
4—Flight recorder power switch turned on.

9177. Which items are inoperative when the copilot's pitot and static shutoff valves are closed?

1—Copilot's airspeed and altimeter.
2—Flight recorder and speed warning switch.
3—Cabin differential pressure gauge and copilot's airspeed.
4—Speed warning switch, copilot's pitot-static instruments, and flight recorder.

9178. What action should be taken if the flaps lock in any position except up?

1—Position the flap lever up.
2—Leave the flap lever where it is.
3—Recycle the flap lever in an effort to get the flaps to the desired position.
4—Position the flap lever at the position corresponding to the flap position.

9179. What should be done if a failure of the flap drive torque tube, during manual operation, results in a change in trim about the rolling axis?

1—Release the asymmetrical flap brake valve and return the flaps to desired position.
2—Move the flap handle to the position the flaps are in and land with the condition.
3—Manually return the controllable flaps to the position assumed by the uncontrollable flaps.
4—Hold the flaps in position with the handcrank.

9180. When the flap lever is placed in the full-down position, the flaps move to an intermediate setting and then stop due to an asymmetric condition. What should be done if this failure occurs during flight?

1—Lower the flaps by manually controlling the flap hydraulic selector valve.
2—Move the flap lever to the full-up position.
3—Adjust the flap lever to correspond to the position of the flaps.
4—Use the handcrank to move the flaps to the approach climb (50 percent) position.

9181. How should the flaps be operated after a failure of the flap system hydraulic pressure?

1—Depress or raise the button on the flap selector valve.
2—Use the alternate flap electric control system.
3—They should not be moved from their position at the time of the failure.
4—Rotate and pull the manual shift handle, then use the handcrank to position the flaps.

9182. Which action should be taken if there is a failure of the flap electrical control system?

1—Attach the handcrank, and move flaps to the desired postion.
2—Move the flap lever to a position corresponding to the position of the flaps; do not attempt to move flaps again.
3—Depress or raise the button on the flap selector valve until flaps move to desired position.
4—Release the manual override on the emergency flap brake valve, then position the flap selector valve manually.

9183. What happens when the elevator tab power selector is placed in emergency position?

1—Elevator tab actuation is possible from the mechanical trim control wheel only.
2—The elevator tab can be controlled from switches on the pilot's flight control wheel only.
3—Trim system power source is changed from hydraulic to electric.
4—Elevator tab actuation is changed to a 28V d.c. system.

9184. How should a runaway trim tab be stopped, when the elevator trim tab power selector switch is in the emergency position?

1—By pulling the a.c. power circuit breaker.
2—By actuating the pilot's or copilot's switch to the opposite position.
3—By placing the tab selector switch to the OFF position.
4—By placing the tab power selector switch to normal.

9185. What are indications that only one of the three flight control systems has lost hydraulic boost?

1—One booster off light illuminated.
2—Four engine hydraulic pump lights illuminated.
3—Two booster off lights illuminated.
4—One booster switch in off position.

9186. How are the flight control surfaces normally operated?

1—By electric actuators.
2—By hydraulic actuators.
3—By manual force exerted through the control column directly to the control surface.
4—By tabs which exert aerodynamic force on the control surfaces.

9187. What is the effect of the loss of one hydraulic system on operation of the flight controls?

1—Travel of the control surface is reduced.
2—The pilot must exert double the normal force to obtain a particular airplane response in flight.
3—The control surface can be moved the normal amount, but speed of surface movement is slower.
4—Movement of the flight control and the control surface remains normal.

9188. Asymmetrical flap protection is provided under which condition?

1—Only during normal flap operation.
2—Only in emergency operation.
3—With the flap control handle in the up position.
4—Only when utility pressure has been lost and the flap control switch is in the normal position.

9189. What takes place when the flap asymmetry system actuates?

1—Hydraulic pressure to operate the flap motor is removed.
2—The flaps are locked by electric brakes.
3—All four flaps are returned to the up position.
4—Flap drive shafts are locked by the emergency flap brakes.

9190. What is rudder boost pressure with the flap lever between up and 15 percent?

1—1,100 – 1,400 PSI.
2—1,100 – 1,600 PSI.
3—2,900 – 3,200 PSI.
4—2,900 – 3,300 PSI.

9191. What is the effect of flap operation on the primary flight controls?

1—Flaps down; rudder booster pressure is increased.
2—Flaps down; rudder booster pressure is decreased.
3—Flaps up; aileron travel is restricted.
4—Flaps up; elevator travel is restricted.

9192. What corrective action can be taken if the emergency flap brake valve actuates in flight?

1—The flaps can be lowered only.
2—The flaps can be raised only.
3—The valve must be overridden before the flaps are lowered for landing.
4—The valve can be overridden on the ground only.

9193. Which are the power sources for the flap system?

1—Normal – auxiliary hydraulics; emergency – manual.
2—Normal – utility hydraulics; emergency – booster hydraulics or handcrank.
3—Normal – utility hydraulics; emergency – manual.
4—Normal – booster or utility hydraulics; emergency – electric.

9194. Which is an indication of a complete loss of power to the elevator tab motor?

1—Both elevator booster lights illuminated.
2—Elevator tab power selector in OFF position.
3—Warning flag visible on the elevator trim tab position indicator.
4—No change in elevator tab position indicator when the switch on the pilot's flight control wheel is pressed.

9195. Placing the elevator trim tab power selector switch in the emergency position will render which switches inoperative?

1—Control wheel switches only.
2—Pedestal switches only.
3—Pedestal and autopilot switches.
4—Control wheel and pedestal switches.

9196. Which tab is ground adjustable only?

1—Rudder.
2—Elevators.
3—Right aileron.
4—Left aileron.

9197. What is the normal source of power for the trim tab system?

1—Mechanical.
2—115V a.c. motors.
3—28V d.c. motors.
4—Hydraulic motors or actuators.

9198. The loss of which hydraulic systems will affect the operation of the flight controls?

1—Auxiliary and utility systems only.
2—Utility and booster systems only.
3—Auxiliary and booster systems only.
4—Auxiliary, utility, and booster systems.

9199. Which action should be taken to isolate a faulty electrical system if electrical fire or smoke is determined to be located in the fuselage?

1—ATM and ATM generators, off; engine-driven generators, trip field.
2—ATM and ATM generator, on; engine-driven generators, off.
3—All generators, off; both inverters, on.
4—Essential a.c. bus, on; all other buses, off.

9200. Which procedure should be used if it is determined that an electrical fire source is in a nacelle?

1—Turn the generator switch OFF, then to RESET.
2—Operate the ATM generator and turn all engine-driven generators off.
3—Field trip the generator; then turn the switch to the OFF position.
4—Feather the propeller, leave the generator switch ON.

9201. What precaution should be taken if there is a failure of one 40 KVA generator?

1—Monitor the loads assumed by the remaining generators.
2—Switch the essential a.c. bus to the generator with the least load.
3—Assure that the remaining generators are operating in parallel to each other.
4—The circuit breakers for the equipment items powered by the failed generator should be opened.

9202. In the event of illumination of a generator bearing failure light confirmed by a loss of generator frequency, what is the first action to take?

1—Generator switch, TRIPPED/OFF.
2—Fire emergency control handle, PULL.
3—Engine condition lever, FEATHER.
4—Generator, DISCONNECT.

9203. What trouble is indicated if the generator out light is on and voltage and frequency are normal after the generator switch has been turned off?

1—Generator to bus relay is open.
2—Field relay for the generator is open.
3—Generator mechanical or electrical failure.
4—Bus tie relay is open.

9204. What trouble is indicated if the generator out light is on but voltage and frequency of only one phase is normal after the generator switch has been placed to RESET?

1—Generator to bus relay is open.
2—Generator mechanical or electrical failure.
3—Bus tie relay is open.
4—Field relay for the generator is open.

9205. Which electrical power source will normally assume the load of the essential a.c. bus when No. 2 generator fails or is turned off during flight?

1—No. 1 generator.
2—No. 3 generator.
3—No. 4 generator.
4—ATM generator.

9206. What type failure is indicated if the SEL PWR OUT light is on when the copilot's a.c. instrument switch is in NORMAL position?

1—The instrument inverter has failed.
2—No power to the copilot's instrument bus.
3—Isolated d.c. bus power has failed.
4—No power to copilot instruments and engine fuel controls.

9207. How should electrical system operation be established prior to normal shutdown of the engines after landing?

1—ATM generator, ON; external power, SELECTED; bus tie switch, NORMAL.
2—GTC, ON SPEED; ATM, ON; engine generator switches, OFF; bus tie switch, TIED.
3—GTC, ON; ATM generator, ON; inverter switches, ON.
4—GTC, ON SPEED; ATM and ATM generator, ON; bus tie switch, TIED.

9208. Which is a proper setting of the electrical system controls for takeoff?

1—D.C. power switch ISOLATED BUS.
2—ATM generator switch ON.
3—Copilot's inverter switch ESSENTIAL a.c. BUS.
4—Bus tie switch NORMAL.

9209. What action is required to start the copilot's a.c. instrument inverter?

1—Select essential a.c. bus power.
2—Placing the switch in standby; the inverter then starts automatically if essential a.c. bus power is not available.
3—Connecting and selecting external a.c. power.
4—Select isolated d.c. bus power.

9210. Which is the source of secondary a.c. power for the copilot's instrument system and the a.c. instrument and engine fuel control system?

1—Battery operated static exciter.
2—No. 2 engine–driven a.c. generator.
3—Inverters and the isolated and essential d.c. buses.
4—The ATM generator.

9211. Under which condition is the ATM generator under–frequency control activated?

1—When the ATM generator is supplying more than one bus.
2—During all flight operations.
3—When cabin pressurization approaches the maximum limit.
4—During engine start.

9212. What is the power source required to drive the ATM generator?

1—The constant–speed drive.
2—The GTC only.
3—Pneumatic system pressure.
4—Main d.c. bus or battery bus.

9213. Which indicators make use of the phase selector switch?

1—Voltmeter and a.c. loadmeter only.
2—Frequency meter and a.c. loadmeter only.
3—Voltmeter and frequency meter only.
4—Voltmeter, a.c. loadmeter, and frequency meter.

9214. How may a generator's field relay be tripped open?

1—By an over–voltage condition.
2—By moving the generator switch to the RESET position.
3—By a feeder fault condition.
4—By moving the generator switch to the OFF position.

9215. What is the significance of illumination of electrical system warning lights?

1—BUS OFF indicator light on, bus is unpowered.
2—BUS OFF indicator light on, bus is receiving inverter power.
3—GENERATOR OUT light off, generator switch turned off.
4—GENERATOR OUT light on, generator relay open, or generator voltage is less than 50 to 90.

9216. During low–speed, ground idle operation, which factor determines the frequency of the a.c. electrical supply?

1—Output speed of the constant–speed drive unit.
2—Engine compressor RPM.
3—Engine gearbox RPM.
4—Speed of the ATM generator.

9217. How many operating generators are required to supply all four a.c. electrical buses?

1—One or more engine–driven generators.
2—Two or more engine–driven generators.
3—Three engine–driven generators and the ATM generator.
4—One ATM generator and one engine–driven generator.

9218. Which buses will be powered if only one engine–driven generator is operating?

1—Essential a.c. and main a.c.
2—Right–hand a.c. and priority a.c.
3—Essential a.c. and essential d.c. only.
4—Right–hand a.c. or left–hand a.c. and main a.c.

9219. Which is a feature of the generator switch?

1—The RESET and FIELD TRIP positions are spring loaded.
2—The RESET position must always be used to reactivate the generator after it has been turned OFF.
3—The generator is always connected to a bus when the switch is ON.
4—The switch must be pulled out to select the FIELD TRIP position.

9220. Frequency of the 40 KVA generator is controlled by

1—a hydraulic transmission.
2—engine speed.
3—the d.c. constant–speed motor.
4—the air–turbine motor speed.

9221. Which position of the d.c. power switch will permit an external power source to charge the battery?

1—EXT D.C. POWER.
2—OFF.
3—BATTERY.
4—TIED.

9222. Under which conditions will the battery be able to power the essential d.c. bus?

1—Bus tie switch CLOSED, and battery switch ON, in the air or on the ground.
2—Anytime the battery switch is ON.
3—Bus tie switch CLOSED, d.c. power switch in BATT position, on the ground only.
4—Reverse current relay CLOSED, d.c. power switch not OFF, on the ground only.

9223. When is the battery disconnected from all buses except the battery bus?

1—When external d.c. power is being used.
2—When the d.c. power switch is off.
3—When the emergency inverter is operating.
4—During flight with all engine-driven generators operating.

9224. What is the purpose of the reverse current relay?

1—Allows flow between two d.c. buses both ways on the ground.
2—Allows flow between two d.c. buses both ways in the air.
3—Prevents current flow between all d.c. buses on the ground.
4—Prevents current flow between all d.c. buses in the air.

9225. During flight, current can flow through a reverse current relay from the

1—main d.c. bus to the essential d.c. bus.
2—main a.c. bus to the essential a.c. bus.
3—three-phase inverter to the essential d.c. bus.
4—essential a.c. bus to the essential d.c. bus.

9226. When is use of the bus tie switch effective?

1—In the air with the gear up.
2—On the ground.
3—Before engine starting only.
4—In the air with the gear down and locked.

9227. What is the normal source of d.c. power?

1—Two transformer/rectifier units.
2—24-volt battery.
3—Four transformer/rectifier units.
4—28-volt battery.

9228. Which component can be powered directly from the battery?

1—ATM generator field.
2—GTC starter.
3—Transformer rectifier.
4—Instrument transformers.

9229. When should the ground power plug normally be disconnected during an engine start?

1—After the GTC is operating.
2—When the first engine has stabilized in low RPM.
3—After two engines are running in high RPM.
4—When all engines are operating in low RPM.

9230. What is indicated when the a.c. external power light is on?

1—Correct polarity.
2—Correct phase sequence.
3—External power source is not suitable for use in the aircraft.
4—External power plug is connected but not supplying the aircraft.

9231. What is indicated when the d.c. external power light is on?

1—Connected and correct phase sequence.
2—Correct voltage and amperage.
3—Correct polarity at the receptacle.
4—External power is applied to the main d.c. bus.

9232. Which condition is required before external a.c. power can be used?

1—The battery switch must be OFF.
2—The ATM generator switch must be OFF.
3—Engine-driven generator switches must be ON.
4—The bus tie switch must be in TIED position.

9233. Which action should be taken if an ATM (air-turbine motor) compartment overheat warning light illuminates?

1—Close the right wing isolation valve.
2—Discharge the GTC fire-extinguisher system.
3—Increase the speed of the ATM.
4—Turn off the GTC.

9234. Which condition is indicated by a light on the gas-turbine compressor control panel?

1—Start light ON; the GTC is accelerating above 35 percent RPM during a start.
2—Door warning light ON; the GTC intake door is not closed.
3—On-speed light OUT; compressor and turbine speeds are normal for operation.
4—On-speed light ON; air-turbine motor is operating at normal speed.

9235. Which condition is required for low-speed, ground-idle operation after landing?

1—Oil cooler flaps MANUAL OPEN.
2—Bus tie switch NORMAL.
3—ATM generator ON.
4—Condition lever LOW SPEED.

9236. How should the air–turbine motor be operated?

1—By using the GTC or engine bleed air as a source on the ground.
2—By using external air, the GTC, or air–conditioning system air on the ground.
3—By using engine bleed air or GTC air in an emergency during flight.
4—By using bleed air from any or all engines during flight.

9237. Which action must be taken for starting the gas–turbine compressor?

1—Place the GTC bleed air switch ON.
2—Place the fuel and ignition switch ON.
3—Open the GTC air intake door.
4—Hold the control switch in START until the ON SPEED light comes on.

9238. Prior to flight, when is the ATM generator normally turned ON?

1—After No. 3 engine is started.
2—After the GTC is started and on speed.
3—Before an external air supply is connected to the aircraft's pnuematic system.
4—After all engines are started.

9239. Which sequence should be used to stop the GTC (gas–turbine compressor)?

1—Bleed air valve CLOSED; GTC door CLOSED; GTC control switch OFF.
2—Bleed air valve CLOSED; GTC control switch OFF; GTC door CLOSED.
3—GTC control switch OFF; GTC door OPEN; bleed air valve CLOSED.
4—GTC door OPEN; bleed air valve CLOSED; GTC control switch OFF.

9240. What is a function of the gas–turbine compressor?

1—Provides a source of air for ground operation of the bleed air system.
2—Provides a source of in–flight emergency electrical power.
3—Supplies supplemental bleed air for high–altitude operations.
4—Supplies auxiliary hydraulic brake pressure for parking and taxiing.

9241. Which unit(s) should be closed if the air–conditioning system output is not controllable automatically or manually, and hot air is entering the cabin?

1—Emergency depressurization valve.
2—Engine bleed air valves.
3—Diverter valve.
4—Turbine bypass valve.

9242. If the outflow valve fails in the closed position, the cabin pressure may increase at an excessive rate. If it cannot be reduced by normal means, what action should be taken?

1—Actuate the emergency depressurization switch.
2—Pull the manual emergency handle.
3—Close the engine bleed valves one at a time.
4—Close the engine bleed valves and the crosswing isolation valve.

9243. In case of a complete pressurization system electrical failure, which component can be manually opened to reduce cabin pressure?

1—Emergency depressurization door.
2—Outflow valve.
3—Pilot's side windows.
4—Emergency depressurization switch.

9244. What is the effect of actuating the emergency depressurization switch?

1—Outflow and safety valves open, air–conditioning shutoff valves close.
2—Bleed valves close and outflow valves open.
3—Emergency pressurization door opens.
4—Outflow valves open, wing isolation valves close, and engine bleed valves open.

9245. What should be done if the cabin differential pressure is more than 1.5" Hg. during the final approach to a landing?

1—Adjust the cabin altitude selector and the rate knob to depressurize faster.
2—Close the engine bleed air valves.
3—Select AIR COND NO PRESS on the master switch.
4—Close the wing isolation valves.

9246. What would be the effect of placing the air–conditioning master switch to the AUX VENT position during flight?

1—Conditioned air is recirculated with bleed air and outflow valves closed.
2—Bleed air valves close; outflow and safety valves open to depressurize the aircraft.
3—Compressors are dumped, the outflow valve is closed, and the safety relief valve is opened.
4—Pressurization remains normal until the aircraft touches the ground, at which time all cabin pressure is suddenly dumped.

9247. Which action should be taken if hot bleed air is leaking into the cargo compartment?

1—Place the air–conditioning shutoff switch to OFF.
2—Turn the master switch to AIR COND MAN PRESS.
3—Operate the emergency depressurization switch.
4—Disconnect the faulty cabin supercharger.

9248. Which selection is used to decrease flight station air temperature if automatic controls are inoperative?

1—Air-conditioning master switch, AUX VENT.
2—Flight deck temperature rheostat, COOL.
3—Flight deck air-conditioning shutoff switch, OFF.
4—Flight deck temperature control switch, COOL.

9249. Which step should be taken when changing from pressurized to nonpressurized flight while flying below 10,000 ft. aircraft altitude?

1—Select AUX VENT.
2—Close all engine bleed valves.
3—Set the cabin altitude knob to aircraft altitude.
4—Select AIR COND MAN PRESS and hold the manual pressure control switch in the INCREASE position.

9250. Which action should be taken when descending from cruise altitude while operating the pressurization system in AIR COND MAN PRESS mode?

1—Select the DECREASE position on the manual pressure control.
2—Select the INCREASE position on the manual pressure control.
3—Select landing airport elevation on the cabin pressure controller.
4—Select ZERO on the differential pressure gauge.

9251. How should the pressurization controls be set during descent, with the air-conditioning master switch set for AIR COND MAN PRESS?

1—Gradually decrease pressurization by reducing engine bleed air input to the cabin.
2—Hold the manual pressure control switch in DECREASE until descent is completed.
3—Intermittently position the manual pressure control switch to DECREASE to open the outflow valve.
4—Set the cabin altitude knob for the desired cabin altitude and set the rate knob to desired rate.

9252. Which control should be adjusted if the cabin altitude is not climbing as fast as desired?

1—Climb control to cause the relief valve to open faster.
2—Cabin altitude selector to cause the pneumatic duct pressure to decrease.
3—Cabin rate selector to cause the pneumatic duct pressure to decrease.
4—Cabin rate selector to cause the outflow valve to close slower.

9253. What is the effect of placing the flight deck temperature control in a cooler position?

1—A greater proportion of bleed air is routed through the cooling turbine.
2—The heat exchanger outlet valve is opened to admit more outside air.
3—Pressure drop across the cooling turbine is decreased.
4—The auxiliary vent valves are closed to a greater degree.

9254. What means is used to obtain the initial reduction of air temperature in the cabin cooling system?

1—An air to air heat exchanger.
2—Expansion of air through the turbine.
3—A freon condenser.
4—An increase in airflow velocity.

9255. Which air-conditioning master switch position is used for air-conditioning on the ground after one or more engines are operating?

1—AIR COND NO PRESS.
2—AIR COND GTC.
3—OFF.
4—AUX VENT.

9256. How should the pressurization system be set during taxi operations before takeoff?

1—No pressurization to allow rapid evacuation in event of fire.
2—Pressurization to a negative cabin altitude to prevent pressure surge at takeoff.
3—Pressurization to a positive pressure to keep exhaust fumes out of the flight deck.
4—Pressurization to a cabin altitude below airport altitude to permit checking the flight instrument systems for leaks.

9257. What is normal for operation of the pressurization system on the ground?

1—The cabin altitude should be set below airport elevation before takeoff.
2—The cabin compressors should be in dump position on the ground.
3—Pressure differential should be gradually increased during taxi to prevent pressure surges or bumps during the takeoff and initial climb.
4—The cabin must be completely depressurized for takeoff and landing.

9258. The cargo compartment under-floor heating system utilizes

1—air from and through the cargo compartment air-conditioning unit.
2—a flow diverter valve which is thermostatically controlled.
3—jet pumps to ensure circulation.
4—air from and through the flight deck air-conditioning unit.

9259. When does the recirculating fan operate?

1—When the under-floor heat is turned on.
2—When its switch is turned on.
3—When the cargo compartment air-conditioning system is turned on.
4—When the air-conditioning master switch is in one of the air-conditioning positions.

9260. Which sources of air are used for air-conditioning on the ground?

1—Gas-turbine compressor bleed air or external air-conditioning unit.
2—Engine bleed air or engine-driven cabin compressor air.
3—Engine-driven cabin compressor air or auxiliary ventilation.
4—Engine bleed air, gas-turbine compressor bleed air, or external air-conditioning unit.

9261. Which is a feature of the windshield defogging system?

1—Uses a diverter valve to take priority over the foot warmers.
2—Receives air from the cargo compartment air-conditioning unit.
3—Has a separate electric control system.
4—Utilizes unmodulated bleed air and an electric fan.

9262. Which is an operating feature of the flight deck air-conditioning unit?

1—It can be controlled by a manual override, cable-operated system.
2—It is controlled by its own temperature selector switch and its own air-conditioning master switch.
3—The heat exchanger uses ram air assisted by a fan which is driven by the cooling turbine.
4—It is not affected by the emergency depressurization switch.

9263. What is the effect of placing the flight deck temperature control switch in the OFF position?

1—The temperature control valve remains in a set position regardless of other controls.
2—Automatic temperature regulators drive the valves to the FULL COLD position.
3—Flight deck temperature can be regulated with the air-conditioning master switch.
4—The flight deck temperature rheostat retains control unless the switch is placed in COOL or WARM position.

9264. What is the effect of selecting AUX VENT on the air-conditioning master switch?

1—Ambient air enters the aux vent valves, and cabin air exits through the outflow and safety valves.
2—Bleed air enters the fuselage and escapes through the aux vent dump valve.
3—Cabin pressure is relieved through the safety valve, and auxiliary pump air is admitted to the fuselage.
4—Outside air enters the engine scoops and is vented to the flight compartment.

9265. Which position of the air-conditioning master switch will cause the safety valve to close?

1—AIR COND GTC.
2—AUX VENT.
3—OFF.
4—AIR COND NO PRESS.

9266. What is the result of placing the air-conditioning master switch in the AIR COND GTC position?

1—The flight deck air-conditioning unit receives a reduced volume of airflow; cargo compartment airflow is normal.
2—The safety valve opens at 5.12" differential pressure.
3—The cargo compartment air-conditioning unit receives a normal volume of airflow if the bleed air system air pressure is above 27 PSI.
4—Both the outflow and safety valves open.

9267. What may be the result of placing the air-conditioning master switch to AIR COND GTC while the engines are supplying bleed air?

1—The GTC may automatically shut down.
2—The airflow regulators may be damaged by excess pressure.
3—Flight deck conditioned air may become uncontrollably hot.
4—The fuselage may become pressurized on the ground.

9268. When the engines are supplying bleed air to the air-conditioning system, which position of the air-conditioning master switch should not be used?

1—Air-conditioning automatic pressurization.
2—Air-conditioning manual pressurization.
3—Air-conditioning no pressurization.
4—Air-conditioning GTC.

9269. Which control should be adjusted if the cabin differential pressure approaches the maximum too early during a climb?

1—The rate control to cause the outflow valve to close slower.
2—The cabin altitude control to cause the bleed air pressure to increase.
3—The rate control to cause the outflow valve to close faster.
4—The manual pressure control switch to cause the safety valve to close.

9270. When using a mobile ground air-conditioning unit to air-condition the aircraft on the ground, which control position is required?

1—Air cond. master switch – AIR COND GTC.
2—Air cond. shutoff switches – OFF.
3—Air cond. master switch – AUX VENT.
4—Manual override – pulled CLOSED.

9271. A function of the pressurization safety valve is to

1—prevent atmospheric pressure exceeding cabin pressure.
2—prevent exceeding .76" Hg. differential pressure when on the ground.
3—prevent a pressure differential between the flight deck and the cargo compartment.
4—prevent landing with a positive cabin pressure.

9272. What will occur in the event that auxiliary (ambient) ventilation is selected while at cruising altitude?

1—Rapid decompression.
2—Increased cooling efficiency.
3—Overspeeding of the cabin supercharger (compressor).
4—Cabin altitude will be reduced.

9273. What is the approximate maximum altitude at which a sea level cabin pressure can be maintained?

1—8,000 ft.
2—15,000 ft.
3—18,000 ft.
4—25,000 ft.

9274. What means are provided to control the opening of the pressurization outflow butterfly valve?

1—Electric motor, solenoid, and manual actuator.
2—Solenoid dump valve and pneumatic pressure only.
3—Pneumatic pressure, electric motor, and manual actuator.
4—Electric motor, solenoid dump valve, and pneumatic pressure.

9275. How is cabin pressurization controlled during normal, automatic operation?

1—Modulating bleed air output of the engines.
2—Controlling air admitted to the cabin.
3—Regulating the speed of the cabin air compressors.
4—Limiting the amount of air leaving the fuselage.

9276. When will the negative pressure relief valve open during descent?

1—When the airplane altitude becomes equal to the cabin altitude.
2—When the airplane altitude becomes less than the cabin altitude.
3—When the airplane altitude becomes greater than the cabin altitude.
4—When the cabin pressure controller is reset.

9277. Which control position is proper during the preflight check when ready to start engines?

1—Temperature datum switches – AUTO.
2—Condition levers – RUN.
3—Fuel enrichment switches – NORMAL.
4—Ground idle buttons – OUT.

9278. Which control position is proper during the preflight check when ready to start engines?

1—Oil cooler flap switches – FIXED.
2—Inverters – ON.
3—Sync master switch – ENGINE 2.
4—Air-conditioning master switch – AIR COND AUTO PRESS.

9279. Which item should be checked in the nose section area during the walk-around inspection?

1—Angle of attack indicator.
2—ATM inlet and exhaust.
3—Pitot masts and heads.
4—Trailing wire antenna.

9280. Which item should be checked to assure that the aircraft is safe before beginning the preflight checks?

1—Nose gear lock – REMOVED.
2—Condition levers – GROUND STOP.
3—Landing gear lever – NEUTRAL.
4—Parking brake – SET.

9281. How are the portable oxygen units recharged?

1—By filling with liquid oxygen from the liquid oxygen converter.
2—By attaching a flex hose to the recharging point and using system pressure (approximately 300 PSI).
3—Removing the unit from the aircraft for recharging with high-pressure liquid oxygen.
4—By attaching a flex hose to the recharging point and using full system gaseous pressure (approximately 1,800 PSI).

9282. Which is an indication that the liquid oxygen supply is nearly depleted?

1—Oxygen pressure gauge indicating 1,800 PSI or less.
2—LOX quantity gauge indicating 25 liters or less.
3—Oxygen quantity gauge does not decrease when the test switch is depressed.
4—Low-level warning light is illuminated.

9283. What is the function of the heat exchanger in the liquid oxygen system?

1—Heat the gaseous oxygen to cabin air temperature.
2—Provide heat to convert liquid oxygen to gaseous oxygen.
3—Remove heat from the surface of the liquid oxygen container.
4—Prevent freezing of moisture in oxygen lines in the event of loss of pressurization.

9284. The percentage of oxygen supplied to the mask when the regulator is selected to normal depends on

1—aircraft altitude.
2—pressure in the supply bottle.
3—cabin altitude.
4—respiratory rate of the user.

Table 5

OPERATING CONDITIONS	1	2	3
Takeoff Weight	145,000	120,500	150,700
Original CG - %MAC	23.5	29.8	28.7
Length of MAC	164.5	164.5	164.5
LEMAC	TS-39.6	TS-39.6	TS-39.6
Weight Moved	2,770	4,000	1,700
Cargo Locations FWD	TS-210	TS+150	TS+239.5
AFT	TS+239.5	TS-120	TS-30

9285. What is the new CG position after the weight is moved from the forward to the aft location under operating conditions No. 1, Table 5?

1—18.3 percent.
2—25.4 percent.
3—28.7 percent.
4—29.1 percent.

9286. What is the new CG position after the weight is moved from the aft to the forward location under operating conditions No. 2, Table 5?

1—23.2 percent.
2—24.4 percent.
3—27.7 percent.
4—30.3 percent.

9287. What is the new CG position after the weight is moved from the aft to the forward location under operating conditions No. 3, Table 5?

1—25.5 percent.
2—26.9 percent.
3—27.4 percent.
4—30.5 percent.

9288. What is the maximum payload under operating conditions No. 1, Table 6?

1—19,300 lb.
2—24,000 lb.
3—43,300 lb.
4—54,500 lb.

9289. What is the maximum payload under operating conditions No. 2, Table 6?

1—36,430 lb.
2—40,990 lb.
3—57,090 lb.
4—62,600 lb.

9290. What is the maximum payload under operating conditions No. 3, Table 6?

1—43,590 lb.
2—45,910 lb.
3—50,000 lb.
4—57,090 lb.

Table 6

OPERATING CONDITIONS	1	2	3
Basic Operating Weight	70,500	72,400	69,700
Maximum Zero Fuel Weight	125,000	126,790	126,790
Maximum Landing Weight	130,000	135,000	135,000
Maximum Takeoff Weight	155,000	155,000	155,000
Fuel Tank Load	60,500	41,610	35,300
Estimated Fuel Burn	41,200	20,440	15,910

Table 7

OPERATING CONDITIONS	1	2	3
Original Weight	120,000	115,000	122,500
Original CG - %MAC	20.2	28.7	23.2
Length of MAC %MAC	164.5	164.5	164.5
LEMAC	TS-39.6	TS-39.6	TS-39.6
Weight Added	6,500	12,500	8,500
Location Added	TS+239.5	TS-120	TS+150
NOTE: STA. 527.0 = TRIM STA. (TS) 0.0			

9291. What is the new CG position after adding weight under operating conditions No. 1, Table 7?

1—12.9 percent.
2—20.9 percent.
3—25.8 percent.
4—27.9 percent.

9292. What is the new CG position after adding weight under operating conditions No. 2, Table 7?

1—21.1 percent.
2—25.7 percent.
3—27.9 percent.
4—36.3 percent.

9293. What is the new CG position after adding weight under operating conditions No. 3, Table 7?

1—23.8 percent.
2—26.8 percent.
3—29.2 percent.
4—30.0 percent.

9294. What minimum weight of cargo must be shifted from the forward to the aft cargo location to bring the CG within limits under operating conditions No. 1, Table 8?

1—750 lb.
2—1,110 lb.
3—1,230 lb.
4—6,717 lb.

9295. What minimum weight of cargo must be shifted from the aft to the forward cargo location to bring the CG within limits under operating conditions No. 2, Table 8?

1—741 lb.
2—1,222 lb.
3—1,310 lb.
4—1,570 lb.

9296. What minimum weight of cargo must be shifted from the forward to the aft cargo location to bring the CG within limits under operating conditions No. 3, Table 8?

1—122 lb.
2—775 lb.
3—1,160 lb.
4—2,086 lb.

9297. What is the effect of altitude change on the duration of the crew oxygen system?

1—Duration decreases with increased altitude when using 100 percent oxygen.
2—Duration remains constant with altitude change when using 100 percent oxygen, but decreases with altitude when using normal oxygen.
3—Duration increases with increased altitude when using 100 percent oxygen.
4—Duration remains constant with altitude when using either 100 percent or normal oxygen.

Table 8

OPERATING CONDITIONS		1	2	3
Takeoff Weight		155,000	133,330	100,100
Original CG -	%MAC	21.9	31.5	16.5
Affected CG Limit	%MAC	23.2	30.0	18.4
Cargo Locations	FWD TS	-120	-30	-210
	AFT TS	+150	+239.5	+60
MAC 164.5, LEMAC TS -39.6, TS 0 = STA. 537.0				

Table 9

OPERATING CONDITIONS	1	2	3
Basic Operating Weight (BOW)	70,500	70,450	69,800
BOW CG - %MAC	25.0	23.5	20.4
Cargo Compt. A (TS-299.5)	1,000	3,000	3,000
Compt. B (TS-210)	2,000	4,500	5,500
Compt. C (TS-120)	3,500	5,500	6,500
Compt. D (TS-30)	3,500	6,500	7,500
Compt. E (TS+60)	2,500	6,500	7,000
Compt. F (TS+150)	2,500	6,000	6,500
Compt. G (TS+239.5)	1,000	6,000	6,000
Fuel Avg. Sta. 555.0	30,000	42,000	43,000
NOTE: STA. 527.0 = TRIM STA. (TS) 0.0 MAC 164.5", LEMAC 487.4 (TS -39.6)			

9298. What is the loaded CG in percent MAC under operating conditions No. 1, Table 9?

1—24.8 percent.
2—25.8 percent.
3—26.3 percent.
4—26.5 percent.

9299. What is the loaded CG in percent MAC under operating conditions No. 2, Table 9?

1—22.4 percent.
2—25.8 percent.
3—27.6 percent.
4—28.7 percent.

9300. What is the loaded CG in percent MAC under operating conditions No. 3, Table 9?

1—20.7 percent.
2—24.5 percent.
3—26.3 percent.
4—28.5 percent.

9301. What is the new CG position after removing the weight under operating conditions No. 1, Table 10?

1—21.8 percent.
2—22.4 percent.
3—28.8 percent.
4—36.6 percent.

9302. What is the new CG position after removing the weight under operating conditions No. 2, Table 10?

1—20.3 percent.
2—21.4 percent.
3—26.3 percent.
4—27.5 percent.

9303. What is the new CG position after removing the weight under operating conditions No. 3, Table 10?

1—22.0 percent.
2—25.4 percent.
3—27.3 percent.
4—28.9 percent.

Table 10

OPERATING CONDITIONS	1	2	3
Original Weight	155,000	130,500	100,350
Original CG - %MAC	29.5	20.8	24.6
Length of MAC	164.5	164.5	164.5
LEMAC	TS-39.6	TS-39.6	TS-39.6
Weight Removed	7,500	9,600	12,500
Location of Weight Removed	TS+239.5	TS-120	TS-30
NOTE: STA. 527.0 = TRIM STA. (TS) 0.0			

Table 11

OPERATING CONDITIONS		1	2	3
Departure Airport Elevation	FT.	1,000	2,000	1,500
Pressurization Start	FT. above Airport	500	1,000	---
Cruising Altitude	FT.	20,000	22,000	25,000
Desired Cabin Altitude	FT.	8,000	7,000	8,000
Aircraft Rate of Climb	FT./MIN.	750	800	1,900

9304. What cabin rate of climb is required to reach cruising altitude and desired cabin altitude at the same time under operating conditions No. 1, Table 11?

1—264 ft./min.
2—281 ft./min.
3—300 ft./min.
4—313 ft./min.

9305. What cabin rate of climb is required to reach cruising altitude and desired cabin altitude at the same time under operating conditions No. 2, Table 11?

1—153 ft./min.
2—169 ft./min.
3—195 ft./min.
4—206 ft./min.

9306. What cabin rate of climb is required to reach cruising altitude and desired cabin altitude at the same time under operating conditions No. 3, Table 11?

1—500 ft./min.
2—528 ft./min.
3—605 ft./min.
4—650 ft./min.

9307. What is the total fuel burn under operating conditions No. 1, Table 12?

1—12,800 lb.
2—14,440 lb.
3—22,160 lb.
4—44,320 lb.

9308. What is the total fuel burn under operating conditions No. 2, Table 12?

1—12,600 lb.
2—16,700 lb.
3—18,130 lb.
4—24,050 lb.

9309. What is the total fuel burn under operating conditions No. 3, Table 12?

1—16,130 lb.
2—17,850 lb.
3—19,200 lb.
4—23,150 lb.

9310. What is the total fuel burn for a 1,500 NMI cruising flight under operating conditions No. 4, Table 12?

1—18,840 lb.
2—19,060 lb.
3—19,200 lb.
4—22,500 lb.

Table 12

OPERATING CONDITIONS		1	2	3	4
NAM/1,000 LB.		55.4	62.0	67.2	72.5
TAS	KT.	200	220	240	260
Wind Component	KT.	10 HW	10 TW	20 HW	20 TW
Cruise Time	HR.	4.0	4.5	5.0	--

Table 13

OPERATING CONDITIONS		1	2
Aircraft Weight - Start Dump	LB.	113,000	111,500
Zero Fuel Weight	LB.	77,000	80,000
Dump Rate	LB./MIN.	1,350	1,350
Dump Time	MIN.	22	15
Fuel Flow	LB./HR./ENG.	1,200	1,500
Engines Operating During Dump		4	3

9311. How much fuel remains after dumping under operating conditions No. 1, Table 13?

1—4,360 lb.
2—4,540 lb.
3—4,980 lb.
4—5,100 lb.

9312. How much fuel remains after dumping under operating conditions No. 2, Table 13?

1—5,250 lb.
2—9,750 lb.
3—10,125 lb.
4—11,350 lb.

9313. What is the landing weight under operating conditions No. 1, Table 14; according to the cruise chart? (See Figure 38.)

1—86,400 lb.
2—87,750 lb.
3—88,300 lb.
4—89,650 lb.

9314. What is the landing weight under operating conditions No. 2, Table 14; according to the cruise chart? (See Figure 38.)

1—90,600 lb.
2—91,970 lb.
3—92,875 lb.
4—93,150 lb.

9315. What is the landing weight under operating conditions No. 3, Table 14; according to the cruise chart? (See Figure 38.)

1—101,150 lb.
2—102,580 lb.
3—102,820 lb.
4—103,200 lb.

Table 14

OPERATING CONDITIONS		1	2	3
Cruise Altitude	FT.	19,000	17,000	23,000
Ambient Temperature	°C	-13	-19	-41
Weight Start Cruise	LB.	105,000	110,000	115,000
Cruise Time	HR.	3.5	3.5	2.5
Descent & Landing Fuel Burn	LB.	1,350	1,200	1,550

STD. + 10°C

GROSS WEIGHT - POUNDS

PRESS ALT-1000 FT	25	23	21	19	17	15	13	11	9	7	5	3
115,000				321	323	324	325	324	323	322	320	319
				4210	4440	4690	4930	5170	5410	5660	5920	6170
110,000			322	324	326	326	327	326	325	324	322	320
			3990	4220	4460	4700	4950	5180	5420	5680	5930	6180
105,000			325	327	328	329	328	328	327	325	323	321
			4000	4230	4470	4710	4960	5190	5440	5690	5940	6190
100,000		327	329	330	331	331	330	329	328	326	324	322
		3780	4010	4240	4480	4720	4970	5200	5450	5700	5950	6200
95,000	328	330	331	332	333	332	332	331	329	327	325	323
	3580	3790	4020	4250	4490	4730	4970	5200	5450	5710	5960	6200
90,000	332	333	334	335	335	334	333	332	330	328	326	324
	3590	3800	4020	4250	4490	4730	4970	5210	5460	5710	5960	6210
85,000	335	336	337	337	337	336	335	333	331	329	327	325
	3600	3800	4030	4250	4500	4730	4980	5220	5470	5720	5970	6210
80,000 *	338	339	339	339	338	337	336	334	332	330	328	325
**	3600	3800	4030	4260	4500	4740	4980	5220	5470	5730	4970	6220

STD. DAY

GROSS WEIGHT - POUNDS

PRESS ALT-1000 FT	25	23	21	19	17	15	13	11	9	7	5	3
115,000			331	333	335	335	336	335	333	332	331	329
			4280	4530	4800	5050	5320	5590	5850	6100	6400	6690
110,000		331	334	336	337	337	337	336	335	334	332	330
		4060	4290	4540	4800	5050	5320	5600	5870	6110	6410	6700
105,000	331	335	337	338	339	339	339	338	336	335	333	331
	3840	4070	4290	4540	4810	5060	5330	5600	5880	6120	6420	6710
100,000	335	338	340	340	341	341	340	339	337	336	334	332
	3850	4080	4300	4550	4810	5070	5330	5610	5890	6130	6430	6710
95,000	339	341	342	342	343	342	341	340	338	337	335	333
	3850	4080	4310	4550	4820	5070	5340	5610	5890	6140	6440	6720
90,000	342	343	344	344	344	343	342	341	340	338	336	333
	3860	4090	4320	4560	4820	5080	5340	5620	5900	6150	6450	6730
85,000	344	345	346	346	346	345	343	342	340	339	336	334
	3870	4090	4320	4570	4830	5080	5350	5620	5910	6150	6450	6740
80,000 *	348	348	348	348	347	346	345	343	341	339	337	335
**	3880	4100	4330	4570	4830	5090	5350	5630	5910	6160	6460	6740

STD. − 10°C

GROSS WEIGHT - POUNDS

PRESS ALT-1000 FT	25	23	21	19	17	15	13	11	9	7	5	3
115,000		338	341	343	344	344	344	343	343	342	340	333
		4340	4620	4890	5170	5450	5740	6030	6320	6620	6920	7030
110,000	338	341	344	345	346	346	346	345	344	343	341	333
	4070	4350	4630	4900	5180	5460	5750	6040	6330	6630	6930	7000
105,000	342	345	346	347	347	347	347	346	345	344	342	333
	4080	4360	4640	4910	5190	5470	5760	6050	6340	6640	6940	6980
100,000	345	347	349	349	349	349	348	347	346	345	343	333
	4090	4370	4650	4920	5200	5480	5770	6060	6340	6640	6940	6960
95,000	348	350	351	351	351	350	350	348	347	346	343	333
	4100	4380	4650	4920	5210	5480	5770	6060	6350	6650	6920	6940
90,000	350	352	353	353	352	352	351	350	348	347	343	333
	4110	4380	4660	4930	5210	5490	5780	6060	6350	6650	6900	6930
85,000	353	354	355	355	354	353	352	350	349	347	343	333
	4120	4380	4660	4930	5220	5500	5780	6060	6360	6660	6880	6910
80,000 *	355	356	356	356	355	354	353	351	350	348	343	333
**	4120	4390	4660	4930	5220	5500	5780	6060	6360	6660	6870	6900

*True Airspeed - Knots
**Four Engine Fuel Flow - Lbs/Hr

Figure 38

Table 15

OPERATING CONDITIONS		1	2	3
Pressure Altitude	FT.	1,000	10,000	2,500
CAS	KT.	100	120	140
Ambient Temperature	°C	+10	-10	+10

9316. What is the takeoff power available under operating conditions No. 1, Table 15; according to the takeoff power chart? (See Figure 39.)

1—3,600 SHP.
2—3,710 SHP.
3—3,770 SHP.
4—4,000 SHP.

9317. What is the takeoff power available under operating conditions No. 2, Table 15; according to the takeoff power chart? (See Figure 39.)

1—2,900 SHP.
2—3,080 SHP.
3—3,130 SHP.
4—3,270 SHP.

9318. What is the takeoff power available under operating conditions No. 3, Table 15; according to the takeoff power chart? (See Figure 39.)

1—3,530 SHP.
2—3,630 SHP.
3—3,730 SHP.
4—4,000 SHP.

9319. Which steps are included in the fuselage fire procedure?

A. Oxygen – 100 percent
B. Oxygen – emergency
C. Pressurization – emergency depressurization
D. Pressurization – maximum differential

1—A and D.
2—B and C.
3—A and C.
4—B and D.

9320. The elimination of a heavy concentration of smoke from the passenger compartment should be accomplished by

1—first opening a flight deck window and then opening a cabin window.
2—turning on the recirculating fans of the air-conditioning system.
3—depressurizing after making an emergency descent.
4—lowering the cabin altitude.

9321. Which is the preferred method of combating a brake fire on the ground?

1—Spray warm water fog over the wheel and brake assembly.
2—Keep the engine running to blow out the fire.
3—Completely smother the gear with a foam extinguishing agent.
4—Use a dry chemical fire extinguisher.

9322. In the event of an underfloor cargo compartment fire, which of the following actions is accomplished after turning the fan/defog switches off?

1—Emergency descent to a safe altitude.
2—Crew smoke masks on and 100 percent oxygen.
3—Safety relief valve open as required.
4—Flight station door blocked open.

9323. Which action is required to discharge the second extinguisher to an engine which is on fire?

1—Push in and repull the emergency shutdown handle, move the selector switch to transfer, and press the discharge button of the engine having the fire.
2—Move the selector switch to transfer and press the discharge button of the adjacent engine to the one having the fire.
3—Move the selector switch to transfer and press the discharge button of the engine having the fire the second time.
4—Push in and repull the emergency shutdown handle, leave the selector switch in normal position, and press the discharge button of the engine adjacent to the one having the fire.

9324. What is the proper sequence for discharging the fire-extinguishing agent?

1—Switch the bottle selector switch; pull the emergency shutdown handle; press the discharge button.
2—Pull the emergency shutdown handle; press the discharge button.
3—Pull the emergency shutdown handle and hold out; press the discharge button for a least 1 minute; change the bottle selector switch immediately.
4—Press the discharge switch; pull the emergency shutdown handle and hold 30 seconds.

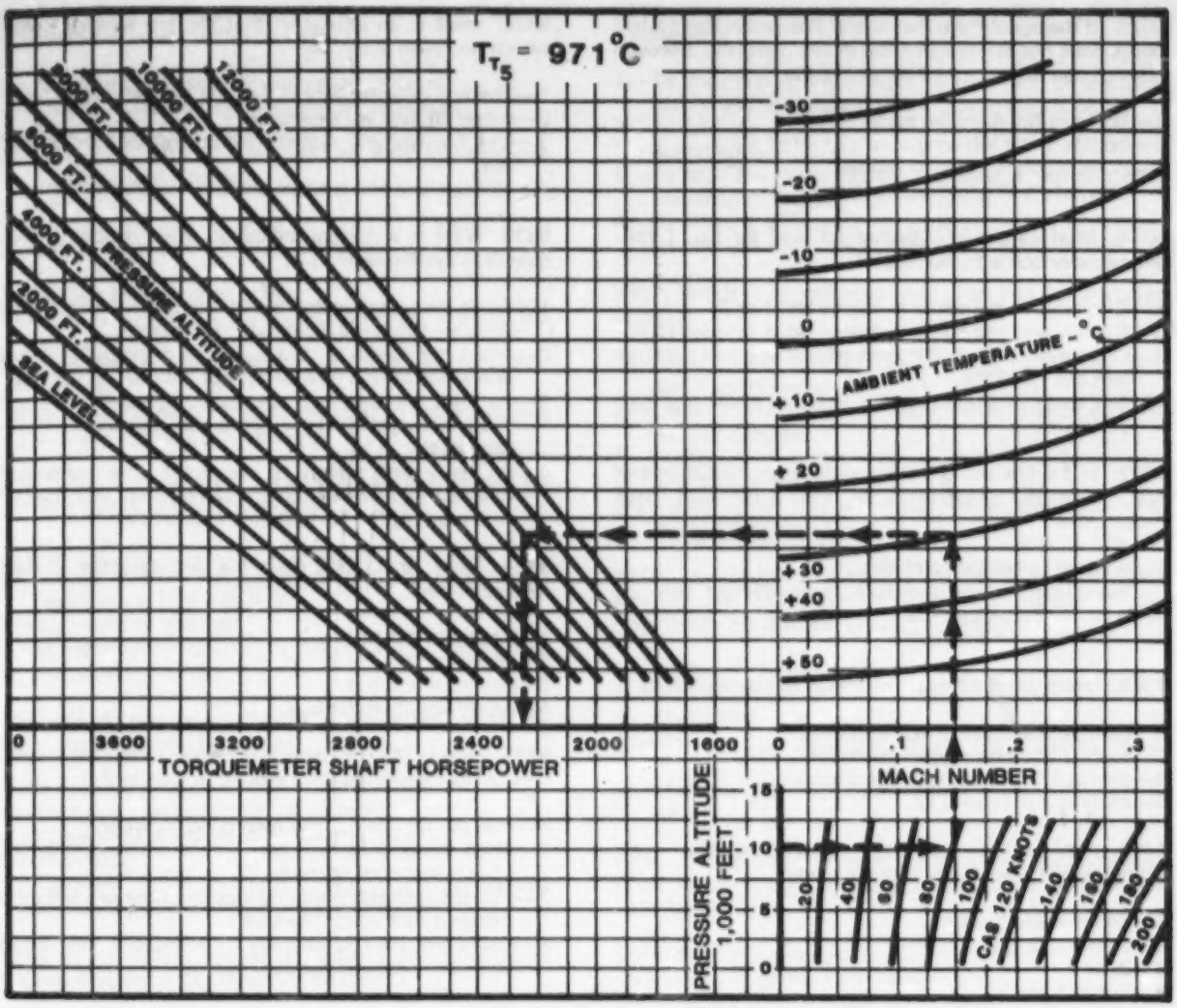

T_{T_5} = 971°C
12000 FT.
10000 FT.
8000 FT.
6000 FT.
4000 FT.
2000 FT.
SEA LEVEL
PRESSURE ALTITUDE
-30
-20
-10
0
+10
+20
+30
+40
+50
AMBIENT TEMPERATURE - °C
0
3600
3200
2800
2400
2000
1600
TORQUEMETER SHAFT HORSEPOWER
0
.1
.2
.3
MACH NUMBER
PRESSURE ALTITUDE
1,000 FEET
15
10
5
0
20
40
60
80
100
CAS 120 KNOTS
140
160
180
200

Figure 39

9325. If the agent from the normal fire-protection system bottle does not extinguish a fire in No. 3 engine, a second attempt can be made by discharging the

1—bottle in No. 4 engine pylon.
2—bottles in the left wing.
3—normal bottle for No. 4 engine.
4—alternate bottle for No. 2 engine.

9326. What causes the discharged light for No. 1 fire-extinguisher bottle to illuminate?

1—Discharge of the bottle to engine No. 1 or 2.
2—Discharge of the bottle to engine No. 1 or overboard.
3—Discharge of the bottle to an engine or bottle pressure less than 600 PSI.
4—Discharge of the bottle due to an overheat and high pressure.

9327. In the fire-extinguishing system, an indication that the maximum temperature at the bottle has been exceeded is

1—a blown yellow indicator disc.
2—the extinguisher temperature gauge will read high.
3—a blown red indicator disc.
4—a low nitrogen precharge.

9328. Lower cargo compartment fires are controlled by

1—using a portable fire extinguisher.
2—sealing to cause oxygen starvation.
3—the built-in fire-extinguishing system.
4—cooling with Freon 112.

9329. Which fire zone(s) is(are) flooded with extinguishant when a discharge is made?

1—Zones 2 and 3 only.
2—Zones 1, 2, and 3.
3—Zone 1.
4—Zones 1 and 2.

9330. What is a proper definition of a fire zone in the engine nacelle?

1—Zone 3 – compressor section.
2—Zone 1 – compressor section.
3—Zone 2 – tailpipe section.
4—Zone 1 – combustion turbine section.

9331. When an engine fire warning occurs in flight, actuation of the cutout switch will

1—silence the bell and put out the light.
2—put the light out but the bell will continue to ring.
3—silence the bell but the light will remain on.
4—reset the light and the bell circuits in preparation for a second fire.

9332. What is an indication that the fire warning cutoff switch has been actuated?

1—The fire-detector light is flashing instead of steady.
2—A bell off light is illuminated.
3—The fire-warning system circuit breaker has popped out.
4—The warning bell is silent and the detector light is out.

9333. What is a normal indication when making a fire-detection system test?

1—When the switch is depressed, the bell will ring and all detector lights will illuminate immediately.
2—When the switch is depressed, all detector lights will illuminate after a time delay, but the bell will not ring.
3—As each test switch is depressed, the bell rings and the associated detector lights will illuminate after a time delay.
4—As each test switch is depressed, the associated detector light will illuminate immediately, but the bell will ring only for the first switch depressed.

9334. From which bus does the fire-detection system receive power?

1—Essential d.c. bus.
2—Main d.c. bus.
3—Essential a.c. bus.
4—Emergency inverter bus.

9335. How is the inflatable evacuation slide at the galley service door deployed for a ground evacuation?

1—Pull the release handle, then open the door.
2—Open the door, attach bar to floor brackets, and kick slide out of door opening.
3—Pull the nitrogen bottle handle, the pressure will open the door and inflate the slide.
4—Open the door electrically or manually; the armed slide will inflate as the door opens.

9336. What procedure should be followed before making ground contact during a belly landing?

1—Nos. 2 and 3 fuel and ignition, OFF.
2—All four emergency shutdown handles, PULL.
3—Flaps, UP.
4—Hydraulic pump switches, OFF.

9337. What will cause the emergency exit lights to come on with the switch in the ARMED position?

1—Loss of main d.c. bus power.
2—Loss of essential a.c. bus power.
3—Removing the light from its mounting fixture.
4—Placing the inverter switch in the EMERGENCY position.

9338. After parking and before leaving the aircraft, the emergency exit light switches should be in the

1—OFF position.
2—ARMED position.
3—ON and TEST position.
4—DISARMED position.

9339. What is a characteristic of the constant turbine temperature cruise control procedure?

1—Fuel flow decreases with increased altitude.
2—True airspeed decreases as weight decreases.
3—True airspeed decreases as OAT decreases.
4—Fuel flow remains constant as long as pressure altitude is not changed.

9340. What should be done to stop a propeller from rotating backward slowly after feathering?

1—Actuate the propeller brake.
2—Push in the emergency shutdown handle and pull the feather button momentarily to unfeather.
3—Place the emergency shutdown handle in the detent position.
4—Pull out the feather button and push in the emergency shutdown handle momentarily.

9341. Which procedure is appropriate for operations with the autofeather system inoperative?

1—Takeoff weight limit must be reduced.
2—Takeoff should not be made if there is a known possibility of bird ingestion.
3—V_{MC} must be reduced.
4—The pitch–lock function of the propeller must also be deactivated for takeoff.

9342. What may result from a rapid movement of the power lever to takcoff position?

1—A runaway propeller.
2—Complete arming of autofeather system and subsequent autofeather of the propeller.
3—Pitch lock.
4—Complete arming of the NTS system and subsequent decoupling of the propeller and powerplant.

9343. Which action should be taken if the RPM of all engines become unstable during cruise?

1—Select the opposite master.
2—Place the sync selector in OFF position.
3—Retard all four throttles to flight idle.
4—Remove all electric power from propeller circuits and adjust each engine's power lever to obtain a synchronized condition.

9344. During approach with power levers in flight idle, what is the probable trouble with TIT – normal, RPM – fluctuating, FF – normal, and torquemeter – negative and fluctuating?

1—NTS system operation.
2—Propeller RPM and phase sync malfunction.
3—Bleed valves opening and closing.
4—Decoupling.

9345. What conditions will cause the mechanical pitch lock to become engaged?

1—Engine overspeeding or loss of engine oil pressure.
2—Engine overspeeding or loss of propeller oil pressure.
3—Negative thrust or propeller governor failure.
4—Feathering operation or BETA operation.

9346. What is the purpose of the propeller pitch–lock mechanism?

1—To maintain a fixed pitch in the event of electrical failure and subsequent loss of governing capability.
2—To lock the propeller in selected pitch during reverse operation.
3—To lock the blades in the full–feather position after actuation of the autofeather system.
4—To prevent a decrease of propeller blade angle during an overspeed.

9347. Which is an indication that pitch lock has occurred in flight?

1—Lower than normal steady RPM; increases with airspeed decrease.
2—Lower than normal steady RPM; increases with throttle decrease.
3—Higher than normal steady RPM; decreases with airspeed increase.
4—Higher than normal steady RPM; decreases with throttle decrease.

9348. During the first part of cruise, a propeller pitch lock occurs and you find that RPM follows throttle movement. What action should be taken?

1—Feather the propeller immediately.
2—Shut down the engine but reduce airspeed to control windmilling RPM.
3—Continue the flight but feather the propeller before landing.
4—Continue the flight but land without using reverse thrust.

9349. During an NTS check, the light does not illuminate. What action should be taken to see if the light or light circuit is faulty?

1—Press the feather button.
2—Pull the emergency shutdown handle.
3—Move the throttle out of BETA range.
4—Place the autofeather master switch to ARMED position.

9350. What is an indication of the proper functioning of the propeller at the beginning of the takeoff run?

1—The high RPM governor limit light should be on.
2—The BETA range indicating light should go out.
3—Prop shaft RPM should remain steady while engine compressor RPM increases to 100 percent.
4—RPM should indicate that the propeller has shifted to the flight low–pitch stop.

9351. Which operation requires the sync selector to be in sync off?

1—Approach and landing.
2—Turbulent air penetration.
3—Takeoff.
4—Climb.

9352. During the autofeather check, after the feather button pulls in and the throttle is retarded to flight idle, the BETA light should go out. What is the next step?

1—Visually check that blade angle is still rotating toward feather.
2—Retard throttle to the START position.
3—Pull the feather button out to the UNFEATHER position.
4—Retard throttle to the BETA range and observe that the BETA light illuminates.

9353. What is a normal indication during a propeller synchronizer ground check with all engines stabilized at 800° TIT, when the master engine throttle is retarded to flight idle?

1—Other engines should follow master within plus or minus 50 RPM.
2—Other engines should decrease no more than 200 RPM.
3—Other engines should remain at the high stabilized RPM.
4—Prop sync selector would automatically rotate to sync off; engine RPM's would be varied but stabilized.

9354. What occurs when the propeller deice control is placed in the test position?

1—Heating elements do not receive full power.
2—The lights which indicate cycling do not operate.
3—The timer is operated at one-fourth speed.
4—Bleed air valves do not operate.

9355. What components are used to deice the propeller cuffs (fairings), and aft spinner?

1—Cycled (timed sequenced) a.c. heating elements.
2—Continuous operation a.c. heating elements.
3—Cycled (timed sequenced) d.c. heating elements.
4—Continuous operation d.c. heating elements.

9356. Which malfunction is prevented or corrected by the NTS system?

1—Propeller driving the engine.
2—Reverse thrust in flight.
3—Undesired feathering in flight.
4—Sudden loss of thrust during takeoff.

9357. How will the negative torque system make a correction if an engine fails and the propeller attempts to windmill the engine?

1—By disconnecting the reduction gearbox from the engine compressor shaft.
2—By increasing propeller blade angle.
3—By increasing propeller RPM.
4—By increasing fuel flow.

9358. What is the purpose of the synchrophasing system?

1—To prevent overspeeding during sudden power lever (throttle) application.
2—To obtain the same power and fuel flow from all engines.
3—To decrease vibration and reduce noise level.
4—To decrease vibration and set all propellers to the same blade angle.

9359. Under which emergency condition should the emergency shutdown handle be left in the IN position?

1—Feathering by the autofeather system.
2—A gen mech fail warning light comes on for engine No. 1, 2, or 3.
3—An indication of negative horsepower.
4—Starter overspeed light in flight.

9360. What is indicated by illumination of the autofeather lights?

1—Propeller is moving toward feather position.
2—Master switch armed and throttles above 75°.
3—Autofeather switches on and takeoff thrust applied.
4—Throttle at takeoff position and thrust less than 500 lb.

9361. What is indicated if the light in the feathering button is illuminated?

1—The propeller associated with this button is feathered.
2—Power is available to operate the feathering pump of the propeller associated with this button.
3—The propeller feathering pump is operating.
4—The NTS system associated with this feathering button and propeller is armed.

9362. Which action causes the engine to start windmilling during the unfeathering procedure?

1—Throttle – flight idle.
2—Emergency shutdown handle – push full in.
3—Feather button – pull out.
4—Fuel and ignition switch – on.

9363. Which conditions cause the autofeather system to actuate?

1—Autofeather switch on, throttle above 75°, and NTS system actuated.
2—Autofeather switches armed, throttle at takeoff, and a reduction of EPR.
3—Master switch armed, throttle 75° – 90°, and thrust 500 lb. or less.
4—Master switch armed, throttle in flight range, and thrust between positive 500 lb. and negative 500 lb.

9364. What is a feature of the autofeather system?

1—Autofeather will operate on approach if the landing gear is down.
2—Pulling the throttle back to BETA on takeoff will cause autofeather to operate.
3—Autofeather should be armed during cruising flight in turbulent air.
4—Autofeather of one engine disarms autofeather on the other engines.

9365. Which function of the propeller requires the availability of electrical power?

1—BETA operation in reverse pitch.
2—Drag limiting by NTS operation.
3—Full feathering to stop propeller rotation.
4—Mechanical speed governing.

9366. What action removes all electrical signals from the propeller control system?

1—Throttle – taxi range.
2—Prop sync selector – sync off.
3—Emergency shutdown handle – pull.
4—Prop sync selector – No. 2 sync.

9367. What condition normally exists in the propeller governor during an overspeed condition?

1—Flyweight force is less than speeder spring force.
2—Governor pump oil pressure is too low.
3—Flyweight force is greater than speeder spring force.
4—Governor pump oil pressure is too high.

9368. What protection does the BETA followup system provide when takeoff power is applied?

1—A variable hydraulic low–pitch stop.
2—A variable mechanical low–pitch stop.
3—A variable hydraulic high–pitch stop.
4—A variable mechanical high–pitch stop.

9369. What modes of operation are normal for the turbopropeller?

1—Controllable pitch below flight idle; constant speed above flight idle.
2—Fixed pitch below flight idle; phase sync above flight idle.
3—Controllable pitch on the ground; constant speed in the air.
4—Fixed pitch on the ground; phase sync in the air.

9370. Which type of malfunction may cause the reduction gear section to decouple from the power section of the engine?

1—Loss of reduction gear section oil pressure.
2—Flame–out when autofeather is not armed.
3—Reverse rotation of the propeller after feathering.
4—Propeller driving the engine and NTS failure.

9371. What is a feature of the BETA followup system?

1—Operates only in BETA range.
2—Provides a mechanical low–pitch stop in flight range.
3—Operates when pitch lock occurs.
4—Provides a variable hydraulic low–pitch stop in flight range.

9372. Which function of the propeller is accomplished without an electrical signal or electrical power?

1—Speed synchronization.
2—Complete feathering.
3—Unfeathering.
4—Pitch–lock control.

9373. When an engine is decoupled, what RPM is indicated?

1—Actual propeller RPM.
2—Zero RPM.
3—Actual engine RPM.
4—Engine RPM corresponding to the actual propeller RPM.

9374. If a decoupling occurs in flight, what RPM will result?

1—Much lower than normal RPM.
2—A momentary overspeed, then normal governed RPM.
3—Much higher than normal RPM.
4—A momentary overspeed, then zero RPM.

9375. If the agent from the normal fire protection system bottle does not extinguish a fire in No. 3 engine, a second attempt can be made by discharging which device?

1—Normal bottle for No. 4 engine.
2—Bottle in No. 4 engine pylon.
3—Bottles in the left wing.
4—Normal bottle for No. 2 engine.

9376. While the engine is coasting down to a stop, it is observed that the turbine temperature is not decaying at the normal rate. Which action is indicated in this event?

1—Feather the propeller immediately.
2—Turn on the ignition to burn the residual fuel.
3—Actuate the emergency shutdown control.
4—Discharge the fire extinguisher to control the fire in the tailpipe extension.

9377. Which is a reason for immediate engine shutdown in flight?

1—A sudden drop in engine oil pressure.
2—An indication of zero RPM.
3—A sudden turbine temperature rise during power increase.
4—An indication of zero turbine inlet temperature.

9378. Which procedure is proper for shutdown of a failed engine while in flight?

1—Retard power lever and pull feather button.
2—Actuate emergency shutdown handle prior to retarding power lever.
3—Retard power lever to cutoff and let automatic feather occur.
4—Retard power lever and actuate emergency shutdown handle.

9379. In the event of an engine failure between V_1 and V_2 speeds, where should the power lever (throttle) of the failed engine be placed?

1—In cutoff position immediately.
2—In BETA range position.
3—In flight idle.
4—At takeoff position.

9380. Which procedure applies for an air–start if the engine has been shut down in flight for 5 minutes?

1—The selection of BETA range with the power lever.
2—The aid of a pneumatic starter.
3—Should be accomplished before the engine cools below 500° C turbine inlet temperature.
4—Should be accomplished only after a suitable cooling period.

9381. What is indicated when a fuel correction light is on?

1—TD system is in temperature controlling range.
2—An over–temperature condition only.
3—TD system is in LOCKED or NULL position.
4—An over–temperature condition or TD system in temperature limiting range.

9382. Which is an indication of an engine over– temperature with the TD system locked above 13,000 RPM and 65 percent throttle?

1—Temperature trim light on.
2—Turbine inlet temperature indication drop.
3—Temperature trim light off.
4—High fuel flow indication.

9383. Which procedure applies after an unsuccessful start?

1—Place fuel and ignition switch on until the RPM drops to zero.
2—Do not restart until TIT drops below 300° C.
3—Continue turning the engine until fuel drainage from the combustion chambers has ended.
4—A restart may be attempted if the TIT has not dropped below 150° C.

9384. During an engine start, if the RPM stagnates below self–sustaining speed, which action should be taken?

1—Turn the primer on.
2—Turn off the fuel and ignition.
3—Disengage the starter.
4—Move the power lever to the ground idle position.

9385. During a starting attempt, if the starter does not shut off at the specified RPM, which action should the crewmember performing the start take?

1—Place the propeller in flat pitch to unload the starter.
2—Manually move the start switch to the OFF position.
3—Pull the emergency shutdown control.
4—Advise ground crew to disconnect pneumatic power source.

9386. If the start switch is released (button pops out) before light–off occurs, which action should be taken?

1—Let the engine stop rotating before attempting another start.
2—Immediately reactuate the switch.
3—Let the engine RPM drop below 10 percent, then reactuate the switch.
4—Let the engine stop rotating and remain stopped for at least 2 minutes before attempting another start.

9387. What action should be taken if the manifold air pressure becomes lower than normal minimum (less than 25 PSI) before the first engine accelerates to light–off speed?

1—Turn off the fuel and ignition.
2—Hold the starter button in (or starter switch on).
3—Actuate the emergency shutdown.
4—Turn off the fuel booster pump, but leave the ignition on.

9388. What action should be taken if the starter overspeed light illuminates steadily during a starting attempt?

1—Shut down with the fuel and ignition switch.
2—Pull the emergency shutdown handle.
3—Pull out the start button.
4—Close the fuselage isolation valves.

9389. What is the maximum RPM limit during start, with no indication of oil pressure?

1—2,200 RPM.
2—5,000 RPM.
3—9,000 RPM.
4—13,000 RPM.

9390. What is the probable cause if the parallel light does not illuminate during a starting attempt (2,700 – 9,000 RPM)?

1—Failure of the primary fuel pump.
2—Failure of the secondary fuel pump.
3—Faulty primer valve.
4—Failure of the engine–driven boost pump.

9391. Which is a normal setting for cruising flight?

1—TIT – 847° C.
2—RPM – 13,200.
3—Oil temperature – 55 ° C.
4—Horsepower or torque – 3,400 ESHP or 19,600 in./lb.

9392. During normal climb, the engines are controlled to maintain which constant factor?

1—Airspeed.
2—Rate of climb.
3—Horsepower (torquemeter pressure).
4—Turbine temperature.

9393. When a takeoff is made under conditions which include high ambient temperature (all systems operating normally), which of the following limits is most likely to be exceeded?

1—RPM.
2—Turbine temperature.
3—Shaft horsepower.
4—Engine pressure ratio.

9394. When should the oil cooler inducer valve be opened?

1—On the ground only.
2—Anytime oil temperature exceeds limits.
3—During engine starting and low RPM operations.
4—In flight only.

9395. At which position should the power lever be placed to properly adjust the propeller for starting?

1—Minimum drag.
2—Low flight idle.
3—Maximum reverse.
4—Zero blade angle.

9396. Which is a feature of the propeller brake?

1—Held disengaged by oil pressure.
2—Provides a brake for normal rotation but not reverse.
3—Always engaged below 23 percent RPM.
4—Prevents a decrease of propeller blade angle.

9397. When does the ignition system operate?

1—Continuously when the fuel and ignition switch is on.
2—Anytime the start selector is positioned to an engine, the fuel and ignition switch is on, and the start button is depressed.
3—Anytime the starter is operating.
4—When the fuel and ignition switch is on and RPM is between 2,200 and 9,000.

9398. When is electrical ignition supplied by the igniter system?

1—Only when the starter is being actuated.
2—During all ground operation
3—During starting and at anytime the propeller is in the BETA range.
4—During air starts and ground starts.

9399. Which condition causes the propeller brake to become locked?

1—Reverse rotation of the propeller.
2—Propeller RPM decreasing below 3,200.
3—Use of ground idle (BETA) in flight.
4—Pulling the emergency shutdown control.

9400. How is starter operation terminated during normal engine starting procedures?

1—Depletion of the air bottle supply.
2—Rotating the start selector switch to off.
3—Automatic cutout at a particular engine RPM.
4—Closing the engine bleed air valve.

9401. Which is the minimum power required to obtain an engine ground start (aircraft not equipped with high–pressure bottle)?

1—A.C. electrical power only.
2—A.C. electrical power and a ground pneumatic source.
3—D.C. electrical power and a ground pneumatic source.
4—D.C. electrical power only.

9402. What is the maximum continuous engine oil temperature for 5 minutes during flight?

1—60° C.
2—85° C.
3—100° C.
4—120° C.

9403. What is a function of the temperature datum system in automatic (normal) position?

1—Provides temperature limiting during BETA operation.
2—Shuts off fuel when the propeller is feathered.
3—Provides temperature controlling during low speed ground idle.
4—Provides a constant fuel flow when TIT varies.

9404. Which is a feature of the powerplant lubrication system?

1—Reduction gearbox oil can be used to replenish propeller oil in an emergency.
2—The power section scavenger pump helps clear oil from the reduction gearbox during noseup flight attitudes.
3—Engine oil is the source of heat which prevents icing of the fuel filter.
4—Power section oil and reduction gearbox oil are not mixed in the oil tank.

9405. What is the function of the electronic temperature datum system?

1—To meter fuel according to compressor inlet pressure, temperature, and engine speed.
2—To deliver 100 percent of the required fuel flow to the fuel control.
3—To meter fuel according to actual TIT and throttle selected TIT.
4—To meter fuel as required to maintain a constant RPM.

9406. Which are features of the engine power section and propeller reduction gearbox lubrication systems?

1—They use the same oil, oil tank, and oil cooler.
2—They have separate lubrication systems with no oil mixing.
3—They have the same oil tank but separate oil coolers.
4—They use the same oil but separate oil pumps and oil coolers.

9407. Which type operation is available when the temperature datum control system is locked?

1—Temperature controlling and temperature limiting.
2—Temperature limiting in low RPM; temperature controlling in high RPM.
3—Temperature limiting but not temperature controlling.
4—Temperature controlling but not temperature limiting.

9408. What type unit is ordinarily provided to prevent accumulations of fuel ice in the fuel control unit?

1—A fuel to hydraulic fluid heat exchanger which uses heat from the hydraulic fluid which has cooled and lubricated the hydraulic pumps.
2—An electric immersion heater in the fuel manifold.
3—A fuel to oil heat exchanger which uses the heat from engine scavenge oil.
4—An air heater which uses bleed air from the final turbine stage.

9409. What controls fuel flow in the low RPM?

1—Throttle position.
2—A governor in the fuel control.
3—The speed sensitive valve.
4—Temperature datum control.

9410. Which medium is used to heat fuel in a heat exchanger?

1—Engine pressure oil.
2—A.C. hydraulic return fluid.
3—Engine scavenge oil.
4—Engine diffuser bleed air.

9411. Which source is used to supply heat to the fuel heater?

1—14th-stage bleed air.
2—Hydraulic fluid.
3—Engine return oil.
4—10th-stage bleed air.

9412. Which factor is used to vary engine power in flight?

1—Propeller blade angle.
2—Fuel flow and turbine temperature.
3—Fuel/air ratio.
4—Turbine RPM.

9413. What is the principle control of engine compressor RPM during normal cruising flight?

1—The fuel control governor.
2—The propeller governor.
3—Power lever position.
4—Ambient air temperature.

9414. Which engine instrument is not reliant upon power from the aircraft's a.c. or d.c. electrical system?

1—Engine tachometer.
2—Turbine inlet temperature.
3—Engine oil temperature.
4—Exhaust gas temperature.

9415. Which is required for operation of the TIT engine instrument?

1—Both the a.c. and d.c. electrical system.
2—D.C. electrical system and thermocouple current.
3—A.C. electrical system and thermocouple current.
4—A.C. and d.c. electrical system and thermocouple current.

9416. What does the engine horsepower gauge indicate?

1—Power delivered to the reduction gearbox.
2—Power delivered to the propeller.
3—Thrust produced by the propeller.
4—Thrust produced by the propeller and the jet exhaust.

9417. When does the tachometer indicate engine compressor speed?

1—Only when the propeller is rotating.
2—Only when the engine is coupled.
3—Only when the engine is running and uncoupled.
4—When the engine is running, coupled or uncoupled.

9418. Which is the best instrument to watch for positive indication of engine anti-ice operation?

1—Shaft horsepower indicator.
2—Pneumatic duct pressure gauge.
3—Tachometer.
4—Turbine temperature gauge.

9419. What does the torquemeter system measure?

1—Positive thrust only.
2—Shaft power at a particular RPM.
3—Propeller shaft thrust.
4—Compressor section thrust.

9420. What is indicated by a red arc on an engine instrument?

1—Precautionary range.
2—Maximum thrust range.
3—Prohibited operating range.
4—Maximum and minimum limits.

9421. Which is directly controlled by movement of the power lever (throttle) during taxi operations?

1—Propeller blade angle.
2—Fuel pump pressure.
3—Turbine temperature limit.
4—Compressor RPM.

9422. Which operating range is associated with the power lever range from flight idle to maximum reverse?

1—Flight idle range.
2—Taxi or BETA range.
3—Pitch change range.
4—Temperature controlling range.

9423. What use is made of the final compressor stage bleed air?

1—Anti-icing of the inlet guide vanes.
2—Anti-icing of the wing leading edges and deicing of the inlet guide vanes.
3—Unloading the compressor during starting.
4—Air-conditioning hot air.

9424. Which function or system is provided by the 5th- and 10th-stage compressor air bleed valves?

1—Engine bleed air to the anti-icing system.
2—Engine bleed air to the starting system.
3—Compressor unloading during starting and low RPM operations.
4—Compressor air for cabin pressurization.

9425. Which components unload the engine compressor during starting?

1—5th- and 10th-stage air bleed valves.
2—5th-stage air bleed valves.
3—5th- and 14th-stage air bleed valves.
4—14th-stage air bleed valves.

9426. What is the effect of changes in ambient air density and temperature on turboprop engines?

1—The thrust decreases as the temperature increases.
2—The thrust increases as the temperature increases.
3—Airflow volume through the engine decreases as air density increases.
4—Airflow volume through the engine increases as air density decreases.

9427. What will be the effect of a decrease in air density with a fixed throttle setting above 65° coordinator setting at a constant RPM?

1—Increase of mass airflow through the engine.
2—Decrease of mass airflow through the engine.
3—Increase of fuel flow.
4—Decrease of turbine inlet temperature.

9428. What undesirable condition can be caused by the use of bleed air for engine airscoop anti-icing?

1—Reduction of turbine inlet temperature.
2—Reduction of cabin compressor inlet pressure.
3—Reduction of cabin temperature.
4—Reduction of shaft horsepower.

9429. Which inputs are recorded on the voice recorder?

1—Captain, first officer, and flight engineer audio panels, and cockpit area microphone.
2—Both pilot microphones, ATC communications, all general flight deck conversation, and flight attendant handsets.
3—All flight deck crewmember audio panels and passenger address microphones.
4—Captain, first officer, and flight engineer microphones; passenger address handset; and flight attendant handsets.

9430. Which is a feature of the cockpit voice recorder?

1—The airplane must be on the ground to completely erase the tape.
2—The last 1 hour of recording is retained on the tape.
3—The tape automatically erases when external electrical power is connected to the airplane system.
4—To test the recorder, press the monitor button and listen to the recording for 5 seconds.

9431. Which method should be used to verify the opening of engine anti-ice valves if the indicator light fails to illuminate?

1—Cross-check the HP indicator with other HP indicators.
2—Check for appropriate reading on the manifold pressure gauge.
3—Turn the associated anti-ice switch off and back on, and observe HP and FF indications.
4—Select the appropriate engine, and observe the temperature gauge changes when the associated switch is turned off and on.

9432. What is the effect of the loss of essential d.c. power on engine anti-icing?

1—Engine anti-icing is turned on.
2—Engine anti-icing is turned off.
3—Engine anti-icing valves position will remain the same as before the power failure.
4—Engine anti-icing valves are controlled by a thermister to open or close, depending on existing OAT.

9433. If arcing of the pilot's windshield requires removal of all heat, the normal operating procedure is to

1—reduce cabin pressure to 5 PSI.
2—limit airspeed to 240K below 10,000 ft.
3—limit airspeed to 240K at all altitudes.
4—return heat to windshield when descending through 10,000 ft.

9434. Which action should be taken if the fuselage overheat warning light comes on in flight?

1—Turn off the empennage deicing switch.
2—Place both wings' switches in the OFF position.
3—Turn off the fuselage isolation switches one at a time, to determine the source of hot air.
4—Place all engine bleed switches in OFF position.

9435. Which action can be taken to maintain wing deicing while preventing bleed air entering the pressurized area?

1—Close both fuselage switches.
2—Close both wings' switches.
3—Place the empennage anti–ice switch off.
4—Place the engine anti–icing switches off.

9436. What should be done if the leading edge overheat warning light comes on?

1—Turn off the deicing switch associated with the particular overheat light.
2—Place both wings' switches in the OFF position.
3—Turn off empennage and all wings' deicing control switches; check temperature gauge to locate overheated section.
4—Discontinue all deicing by placing all four engine bleed switches in the OFF position.

9437. What action should be taken if the right wing area overheat warning light comes on?

1—Turn off the right wing outboard, center, and inboard deicing control switches.
2—Turn off the bleed switches for engines Nos. 3 and 4.
3—Turn off engine anti–ice for engines Nos. 3 and 4, and the right fuselage switch.
4—Turn off the right wing's switch and, as a doublecheck, the right fuselage switch, and engines Nos. 3 and 4 bleed switches.

9438. How should the engine nose cowl ice control system be used?

1—As an anti–icing system to prevent excessive water ingestion.
2—As an anti–icing system to prevent compressor damage from ice.
3—As a deicing system to reduce engine power losses.
4—As a deicing system to reduce the electrical power load.

9439. Which selection should be made for the airfoil anti–icing system during a takeoff in freezing rain?

1—System should be on to prevent possible freezing of flap retraction mechanism.
2—System should be on to prevent loss of lift due to frost formation.
3—System should be off to prevent engine horsepower loss.
4—System should be off to prevent reduction of heated air available to the engine anti–icing system.

9440. What is indicated by illumination of the wings overheat light?

1—Overheat of engine bleed air inside of the wing anti–ice ducting.
2—Overheat of the air in the wing leading edge.
3—Overheat of the leading edge skin.
4—Closing and lockout of the wing anti–ice system valves due to fire.

9441. How should the engine icing control system be used?

1—Turn on the system before entering icing conditions, and continue system operation during flight in these conditions.
2—Turn on the system only when the icing light for the associated engine is on.
3—Use the system only the amount required to keep engine inlet temperature at approximately +4° C.
4—Operate as an anti–icing system on all flights, from before takeoff until after landing.

9442. Which anti–ice or deice operation is not permissible?

1—Wing and empennage deicing on the ground.
2—Engine anti–icing during takeoff.
3—Windshield anti–icing in high during takeoff.
4—Engine anti–icing or wing deicing during landing approach.

9443. What is an indication of normal operation when the anti–icing overheat warning switch is placed in TEST position?

1—The fuselage overheat light, both wing overheat lights, and an annunciator panel light illuminate.
2—The leading edge overheat and fuselage overheat lights illuminate.
3—Four engine icing lights and the leading edge overheat lights illuminate.
4—The annuciator panel ice CON OVHP and the LEOHT lights illuminate.

9444. How should the airfoil deicing system be checked on the ground with the engines running?

1—Operate the airfoil deicing sections one at a time and check for a temperature rise on the temperature gauge.
2—Close all engine bleed valve switches, then observe variations in ammeter indications as airfoil deice switches are placed on then off.
3—Open one engine bleed valve, then briefly place all airfoil deice switches on at once, and observe the power loss on the selected engine.
4—Pressurize the manifold, then close all bleed valves; observe a rapid manifold pressure drop as selected deicing switches are placed on.

9445. What happens to the engine when bleed air is used for anti-icing?

1—An increase of TIT.
2—A decrease of fuel flow.
3—An increase of fuel flow.
4—An increase of engine oil temperature.

9446. Which use should be made of engine bleed air when operating the airfoil deicing system?

1—Use bleed air only from the two engines on the same side as the wing being deiced.
2—Engine bleed air use should be reduced to a minimum during deicing to prevent too great an engine power loss.
3—Use bleed air from all four engines if they are operating.
4—Cross-bleed air from either one of the inboard engines as required.

9447. What happens if the left bleed air shutoff wings switch is placed in CLOSE position?

1—Deicing air to the empennage is shut off.
2—Engines Nos. 3 and 4 bleed air can be used to deice left wing sections.
3—All engine bleed air for deicing the left wing is cut off.
4—All left wing deice modulating valves are shut off.

9448. How long should deicing be applied to the empennage during heavy icing conditions?

1—Until visual inspection shows all ice on leading edges has been melted.
2—Until leading edge temperature reaches +10° C.
3—Same period of time required to deice the wing leading edges.
4—Continuously until the icing light goes out or the LEOHT light illuminates.

9449. How should airfoil deicing be operated?

1—Wings should be deiced first, one wing at a time.
2—The empennage should be deiced first.
3—All surfaces should be deiced simultaneously to reduce engine bleed time to a minimum.
4—Wings should be deiced first, one pair of sections at a time.

9450. The wing and empennage anti-ice system is normally

1—in high-heat position during entire flight.
2—in low-heat position during entire flight.
3—turned on periodically to remove accumulated ice.
4—in high-heat position during time flight is in icing conditions.

9451. Which systems are anti-iced by electric power?

1—Windshields, props, radome, and static ports.
2—Engine inlet scoops, cockpit windows, and pitot/static probes.
3—Props, pitot heads, and windshields.
4—Radome, windshields, pitot probes, static ports, and props.

9452. Which operating rule applies to the windshield heat system?

1—Heat should not be used above 10,000 ft.
2—Use low before high to prevent thermal shock.
3—Use high for quick warmup, then low in cold weather.
4—Heat should not be used during ground operations.

9453. What is the source of heat for the windshield defogging system?

1—Cockpit main air supply.
2—Engine 14th-stage bleed air.
3—Electric heating coils.
4—Current flow through the conductive coating on the vinyl layer.

9454. Which is a normal indication on the windshield cycling lights?

1—The three lights should flash in sequence.
2—When the switch is placed in high, the light remains on.
3—The lights come on to indicate a failure.
4—When the override switch is pushed, the light remains on.

9455. The purpose of the override switch on the windshield heat panel is to

1—shut off the heater in the event of failure of the normal operating switch.
2—start operation in the event the heaters will not operate when the switch is turned on due to low temperature or high resistance.
3—increase the heat to the windshield during extreme icing conditions.
4—decrease the heat to the windshield in case of excess temperature.

9456. How should the pitot heat warning light be checked?

1—The light should go out when the heater switch is turned on.
2—With the switch on, pulling the pitot heat circuit breaker should put the light out.
3—With the switch on, pulling the pitot heat circuit breaker should put the light on.
4—Pressing the test switch should put the light on.

9457. Which is an indication that pitot heat is operating?

1—Both switches on and the failure lights out.
2—An increase on the OAT gauge.
3—An increase on the anti-icing ammeters.
4—Both pitot heater lights on.

9458. How should the pitot heat system be used?

1—On for all operations from takeoff to landing.
2—On 5 minutes before takeoff at 5° C or colder.
3—Off for all ground operations.
4—Off unless visible moisture is present.

9459. What is indicated by illumination of an engine icing light?

1—Ice is forming on the engine inlet guide vanes.
2—The engine anti-ice switch is on but anti-icing hot air is not available.
3—Ice is forming on the engine inlet scoop.
4—Hot air has actuated thermisters in the anti-icing system.

9460. The electrical solenoid controls for the engine airscoop anti-icing system are designed to

1—remain (or change to) off if electrical power fails.
2—remain (or change to) on if electrical power fails.
3—turn off automatically if engine bleed air loss is excessive.
4—turn on automatically if icing conditions exist.

9461. Which source is used for the anti-ice, deice system?

1—Engine airfoils – 14th-stage bleed air.
2—Engine – 10th-stage bleed air; airfoils – 14th-stage bleed air.
3—Engine and airfoils – 10th-stage bleed air.
4—Engine – 14th-stage bleed air; airfoils – turbine section heat exchanger.

9462. How is the passenger stairway and door actuated for evacuation from the inside in event of failure of the normal power systems?

1—Stairs and door both opened by handcrank.
2—Door opened by manually lifting, stair extending by manually pushing out.
3—Door opened by handcrank, stair extended by manually pushing out.
4—Stairs and door both opened by accumulator pressure and hydraulic actuators.

9463. What may be the effect of not completely turning off the windshield wiper control knob?

1—The d.c. operated hydraulic pump may fail to operate the stairs.
2—The wiper motor may burn up.
3—Hydraulic fluid may be lost overboard through the wiper system.
4—Flight control boost may gradually bleed off to zero.

9464. How should trapped fluid pressure be relieved when the landing gear is lowered while the selector valve is jammed in the UP position?

1—Place the gear selector lever in emergency down.
2—Operate the flight controls or flaps.
3—Operate the nosewheel steering wheel.
4—Place all hydraulic pump switches off.

9465. Which condition requires pulling the gear selector valve emergency control handle located in the cabin floor?

1—Loss of system No. 1 hydraulic pressure.
2—Loss of system No. 1 and system No. 2 hydraulic pressure.
3—Failure of cable system between gear lever and gear selector valve.
4—Gear selector valve jammed in up or neutral position.

9466. What action should be taken to lower the landing gear if normal hydraulic pressure has been lost?

1—Place the landing gear lever in emergency down.
2—Pull the gear selector emergency control handle in the cabin floor.
3—Turn off the hydraulic pump switches, then place the gear lever in down to free-fall the gear.
4—Use emergency hydraulic pressure from the d.c. electric pump, and lower the gear by placing the gear lever in neutral.

9467. Which problem is indicated if the hydraulic pump suction gauge shows an excessively negative pressure?

1—Contaminated or blocked filter.
2—Excessive reservoir pressure.
3—Impending pump failure.
4—Reservoir filter is bypassing.

9468. Which functions are not available after the loss of both a.c. pumps in the No. 1 hydraulic system?

1—Hydraulic brakes.
2—Landing gear extension.
3—Windshield wipers.
4—Flight control boost.

9469. What action should be taken if system No. 1 hydraulic pressure is steady at 3,000 PSI during cruising flight?

1—Turn off both system No. 1 pumps.
2—Operate windshield wipers to absorb the excess pressure.
3—Operate the system normally unless there is an overheat indication; in that case, shut off the system.
4—Determine the faulty pump and place its switch off.

9470. What problem is indicated if a system No. 1 low-pressure annunciator light is illuminated?

1—System pressure is low.
2—The reservoir in system No. 1 has low fluid supply.
3—The associated pump output pressure is low.
4—The d.c. motor-driven pump has failed.

9471. Which action should be taken if hydraulic pump No. 1A experiences a thermal trip during flight?

1—Operate No. 1 system on pump No. 1 only.
2—Turn off pump No. 1A until it cools, then use the pump for short periods to prevent overheating.
3—Operate No. 1 system on pump No. 1B only.
4—Press the thermal reset button on pump No. 1A and use the pump as a backup for pumps Nos. 1 and 1B.

9472. How should the hydraulic cooling pump be used during cruising flight?

1—Off – when No. 2 and No. 3 boost pump switches are on.
2—Cooling – at all times when an a.c. hydraulic pump is on.
3—Cooling – only when both No. 2 and No. 3 boost pump switches are off.
4—Off – unless the over-temperature light comes on, and always on before beginning descent.

9473. Which conditions permit nosewheel power steering to operate?

1—Nose strut extended and system No. 1 or No. 2 hydraulic pressure.
2—Nose strut compressed and gear lever in neutral or down.
3—System No. 1 hydraulic pressure, gear lever down or emergency down, and centering cam engaged.
4—System No. 1 hydraulic pressure and gear lever in down detent or below.

9474. Which statement is appropriate when checking the brake wear indicator pins?

1—The brakes should be set.
2—The brakes should be off.
3—Indication is the same with brakes set or off.
4—One engine must be running to supply adequate pressure to the brakes.

9475. What is indicated on the brake pressure gauge?

1—Accumulator air pressure and emergency bottle air pressure.
2—Accumulator fluid pressure and emergency bottle fluid pressure.
3—Accumulator air pressure and emergency bottle fluid pressure.
4—Accumulator fluid pressure and emergency bottle air pressure.

9476. What is a feature of the modulating type emergency airbrake control valve?

1—The valve will modulate the air pressure on and off until the aircraft has stopped.
2—The valve will meter air pressure to the brakes in direct proportion to amount of control handle movement.
3—The valve recirculates the air back to the emergency air bottle.
4—The valve acts like an antiskid system to prevent locking of the brakes.

9477. There is normal brake hydraulic pressure on one side of the brake shuttle valve; the other side of this valve has

1—air pressure.
2—spring tension.
3—static hydraulic fluid.
4—No. 2 hydraulic system pressure.

9478. What is the purpose of the brake lockout cylinder?

1—Serves as a brake pressure debooster.
2—Maintains the correct brake clearances by compensating for wear.
3—Acts as a fluid block to minimize fluid loss in case of a brake failure.
4—Prevents application of hydraulic brakes and airbrakes at the same time.

9479. Which is a normal action of the landing gear system when the gear lever is moved from NEUTRAL to DOWN?

1—Gear is extended by free-fall.
2—Uplocks are released by hydraulic pressure.
3—Downlocks are engaged only when the lever is placed in EMERGENCY DOWN.
4—Hydraulic pressure is only used to engage the downlocks.

9480. In which landing gear lever position is it normal to have three green lights and one red light illuminated?

1—Up.
2—Neutral.
3—Down.
4—Emergency down.

9481. Which hydraulic system provides power for landing gear retraction?

1—Main and nose gear – system 1.
2—Main gear – system 1; nose gear – system 2.
3—Main and nose gear – system 2.
4—Main gear – system 2; nose gear – system 1.

9482. Which is a feature of all three landing gear assemblies?

1—Steering cables.
2—Shock strut actuated downlocks.
3—Multiple disc brakes.
4—Electric up-latch mechanism.

9483. Which system uses No. 2 hydraulic pump output as a backup pressure source?

1—Landing gear system.
2—Nose gear steering.
3—Wing flap system.
4—Windshield wiper system.

9484. Which pumps can be supplied with fluid from the system No. 1 reservoir?

1—A.C. pump No. 1 only.
2—A.C. pumps Nos. 1 and 1A only.
3—Pumps Nos. 1, 1A, and 1B only.
4—Pumps Nos. 1, 2, 1B, and 2B.

9485. How is the direct current hydraulic pump activated?

1—Placing the No. 1B pump switch on.
2—By the brake accumulator pressure reducing to less than 2,200 PSI with the ground tow switch on.
3—By the No. 1 system pressure reducing to less than 2,200 PSI with the ground tow switch off.
4—Placing the system No. 2 pumps switch on.

9486. What is the location of the hydraulic pumps?

1—Engines Nos. 2 and 3.
2—Engines Nos. 1, 2, 3, and 4.
3—A.C. pumps on engines Nos. 2 and 3; d.c. pumps in lower fuselage.
4—All a.c. and d.c. pumps in lower fuselage.

9487. The hydraulic system incorporates

1—two a.c. motor–driven pumps only.
2—three a.c. motor–driven pumps only.
3—three d.c. motor– and one a.c. motor–driven pumps.
4—three a.c. motor– and one d.c. motor–driven pumps.

9488. If hydraulic system pressure is 3,000 PSI and accumulator preload is 1,500 PSI, what is the accumulator air pressure when the system is pressurized?

1—2,000 PSI.
2—3,000 PSI.
3—1,500 PSI.
4—4,500 PSI.

9489. What is shown on the hydraulic pressure indicator?

1—Nos. 1 and 2 system fluid pressures.
2—Output pressure of individual pumps.
3—Pressure on the air side of the system accumulators.
4—Pressure of the a.c. and d.c. pumps.

9490. What happens when the dump system red handles are pulled out?

1—Dump chutes are extended only.
2—Dump chutes are retracted.
3—Dump chutes are returned to drain position and dump valves are closed.
4—Dump chutes are extended and dump valves are opened.

9491. What is a required part of the fuel dumping procedure?

1—Flaps must be lowered to the 78° position.
2—Place controls in drain for 2 minutes after dumping.
3—Cross–feed valves must be open during dumping.
4—Dump chutes must be left down after dumping.

9492. Which device is used to determine that a tank scavenge pump is operating?

1—Crossfeed manifold pressure gauge.
2—Sump pump pressure warning light.
3—Fuel flowmeter.
4—Engine–driven boost pump pressure warning light.

9493. What action should be taken in event of the failure of a fuel system sump pump in an inboard tank?

1—Do not use fuel from the tank.
2—Turn off the tank boost pump.
3—Turn off the affected hydraulic system pump.
4—Close the tank shutoff valve.

9494. What condition is indicated when the engine–driven boost pump low–pressure light comes on in flight, if the boost pump switch has been turned off?

1—The scavenge pump is still operating.
2—Cavitation of the engine–driven pump.
3—The tank cross–feed valve is closed.
4—Clogging of the fuel filter.

9495. What is indicated when a cross–feed valve light is illuminated?

1—The valve is open.
2—The valve is closed.
3—The valve and the position of the valve switch do not agree.
4—The valve is in an intermediate position.

9496. Which device is used to determine that a fuel tank boost pump is producing pressure when the switch is on?

1—Fuel flowmeter.
2—Fuel pump warning light.
3—Boost pump pressure gauge.
4—Cross–feed manifold pressure gauge.

9497. What selection is necessary to read No. 1 system fuel pressure on the fuel cross–feed pressure indicator?

1—No. 1 tank selector and No. 1 cross–feed valves on only.
2—No. 1 tank selector, No. 1 cross–feed, and cross–ship cross–feed valves on.
3—No. 1 cross–feed valve on only.
4—No. 1 tank selector, No. 1 firewall shutoff, No. 1 cross–feed, and cross–ship cross–feed valves on.

9498. What temperature may be read on the fuel temperature gauge?

1—Tank No. 1 only.
2—Tank No. 4 only.
3—All fuel filters only.
4—All main fuel filters and tank No. 1.

9499. Which fuel measurement can be accurately made by the fuel quantity indicators located in the cockpit?

1—Usable gallons, ground or flight.
2—Usable gallons during flight only.
3—Usable pounds, ground or flight.
4—Usable pounds during flight only.

9500. How will the fuel quantity gauge and the drip or sight gauge readings compare if the fuel temperature is higher than standard?

1—The quantity gauge will read higher than the drip or sight gauge.
2—The quantity gauge will read lower than the drip or sight gauge.
3—Both will read the same and will be correct.
4—Both will read the same and will be incorrect.

9501. When changing from a straight tank to engine fuel selection to a cross-feed selection of No. 1 tank to Nos. 1 and 2 engines and No. 4 tank to Nos. 3 and 4 engines, the sequence should be

1—cross-feed valves on, Nos. 2 and 3 tanks off, check fuel pressure, boost pumps on.
2—check fuel pressure, cross-feed valves on, Nos. 2 and 3 tanks off, boost pumps on.
3—boost pumps on, cross-feed valves on, check fuel pressure, Nos. 2 and 3 tanks off.
4—boost pumps on, check fuel pressure, Nos. 2 and 3 tanks off, cross-feed valves on.

9502. What is the normal fuel management procedure when a flight is made with all tanks full?

1—Feed each engine from its respective tank for the entire flight.
2—Cross-feed from tanks Nos. 1 and 4 during cruise until all tanks have equal fuel loads.
3—Cross-feed from tanks Nos. 2 and 3 during cruise until all tanks have equal fuel loads.
4—Feed each engine from its respective tank unless a malfunction causes an imbalance, then cross-feed as needed.

9503. Which is not a permissible fuel imbalance condition for landing?

1—Difference between tanks Nos. 1 and 4 – 450 lb.
2—Difference between tanks Nos. 1 and 4 – 4,500 lb.
3—Difference between tanks Nos. 2 and 3 – 450 lb.
4—Difference between tanks Nos. 2 and 3 – 4,500 lb.

9504. When the test switch for a fuel quantity gauge is actuated, the gauge should

1—stop at the full-tank position.
2—change toward the zero position.
3—change indications continuously until the test switch is released.
4—indicate the total fuel load in the tanks.

9505. When should the fuel boost pumps be normally operated?

1—During all engine operations.
2—During all operations except takeoff.
3—During all operations except taxi.
4—During all operations except cruise at low altitudes (below 10,000 ft.).

9506. Which is an indication of proper operation when the fuel quantity test switch is held in the TEST position?

1—All eight fuel quantity gauges drive toward zero.
2—All eight fuel quantity gauges drive toward full.
3—Cockpit gauges drive toward zero; nacelle gauges drive toward full.
4—Cockpit gauges drive toward full; nacelle gauges drive toward zero.

9507. Fuel dumping is accomplished in flight by means of a

1—dump chute for each main fuel tank.
2—discharge nozzle at each wingtip.
3—common manifold and defueling adapter.
4—dump chute in each wing.

9508. Which pressure is indicated on the fuel pressure gauge?

1—Pressure in the right cross-feed manifold.
2—Output pressure of each boost and scavenge pump.
3—Pressure in the dump and refueling manifold.
4—Output pressure of the dump pumps.

9509. Which valves in the fuel system are electrically operated?

1—Tank selector valves.
2—Emergency shutoff valves.
3—Cross-feed valves.
4—Fuel dump valves.

9510. Which fuel system pumps provide cooling fluid for the hydraulic system heat exchangers?

1—No. 2 and No. 3 tanks boost pumps.
2—No. 2 tank boost and scavenge pumps.
3—No. 2 and No. 3 tanks scavenge pumps.
4—No. 1 and No. 2 tanks sump pumps.

9511. What is the purpose of the fuel scavenge pump?

1—To assist in dumping fuel.
2—To provide a positive pressure to the inlet of the tank booster pump.
3—To keep the tank surge box full.
4—To transfer fuel from one tank to another.

9512. Which event is required to initiate operation of the flight recorder?

1—External power connected and engines running.
2—Recorder switch turned on.
3—External power disconnected and engines running.
4—Battery switch turned on.

9513. Which is a feature of the airspeed limit system?

1—The limit is a constant Mach above 12,000 ft.
2—The limiting airspeed V_{MO} decreases with altitude.
3—The warning can be silenced by a cutout switch.
4—The warning is cut out when the static source is switched to alternate.

9514. What would be the indication on the instantaneous vertical-speed indicator during entry into a 500 ft./min. actual descent from level flight if the normal static ports were iced over?

1—Initially a climb, then a descent at a rate in excess of 500 ft./min.
2—The IVSI would remain at zero regardless of the actual rate of descent.
3—The IVSI pointer would indicate a descent, but at a rate less than 500 ft./min.
4—The IVSI would indicate normally because its source of pressure is the alternate static ports.

9515. Which items are inoperative when the copilot's pitot and static shutoff valves are closed?

1—Copilot's airspeed and altimeter.
2—Flight recorder and speed warning switch.
3—Cabin differential pressure gauge and copilot's airspeed.
4—Speed warning switch, copilot's pitot/static instruments, and flight recorder.

9516. What source is selected when the static selector is placed in the alternate position?

1—Alternate flush static openings on the fuselage skin.
2—An alternate static pressure vent inside the tail cone.
3—An auxiliary pitot/static probe.
4—Dual flush static ports and an alternate pitot head.

9517. Which instruments or systems require an input of pitot pressure in addition to static pressure?

1—Altimeter, airspeed indicator, and flight recorder.
2—Vertical-speed indicator, airspeed indicator, and airspeed warning switch.
3—Airspeed indicator, flight recorder, and V_{MO} warning system.
4—Altimeter, rate of climb indicator, Machmeter, flight recorder, airspeed indicator, and V_{MO}/M_{MO} warning switch.

9518. During the walk-around inspection, you observe covers over the pitot probes. Which of the following would be affected if the covers were not removed?

1—Airspeed, altimeter, and autopilot.
2—Flight recorder, autopilot, IVSI, and airspeed.
3—Flight recorder, airspeed, and autopilot.
4—Cabin differential, flight recorder, altimeter, IVSI, and airspeed.

9519. Which signal alerts the flightcrew if the V_{MO} or M_{MO} is exceeded?

1—A steady bell will ring.
2—An interrupted bell will ring.
3—An interrupted horn will sound.
4—A steady horn will sound.

9520. What is the cockpit indication when a flight control has been deboosted?

1—A single light on the annunciator panel is illuminated.
2—The boost off light is illuminated and the control is more difficult to move.
3—The master warning light is on and control movement travel is restricted.
4—The deboost light is on, the annunciator flight control light is on, and the controls are stiffer.

9521. Which action should be taken to disconnect a flight control booster system?

1—Pull the boost off handle, then pull the boost disconnect handle.
2—Turn off both hydraulic pumps, then pull the boost disconnect handle.
3—Pull the boost disconnect handle, then pull the boost off handle.
4—Turn off both hydraulic pumps, then pull the boost system circuit breakers.

9522. What is the effect of the loss of one hydraulic system supply to the boosted flight controls?

1—Control surface travel is reduced.
2—Trim tabs become ineffective.
3—Control wheel, control column, and rudder pedal travel is reduced.
4—Controls operate normally, but at reduced power.

9523. If the flaps are fully extended to final landing configuration, but the gear is not down and locked, the warning horn will sound

1—intermittently, and cannot be silenced by the cutout button.
2—steadily, and cannot be silenced by the cutout button.
3—steadily, until silenced by the cutout button.
4—intermittently, until silenced by the cutout button.

9524. What effect will the loss of one hydraulic flap motor have on the flap drive system?

1—A flap asymmetry will occur because only one set of flaps will be driven.
2—No effect, because either flap hydraulic motor is capable of operating the flaps.
3—Flap system will not operate because of hydraulic lock created by the inoperative motor.
4—Flap extension speeds must be reduced by 20 knots to reduce airload on the flap, thus preventing the operative flap hydraulic motor from stalling.

9525. What are the power sources for the flap system?

1—Electric motors or manual crank.
2—Hydraulic system No. 1 or electric motors.
3—Hydraulic system No. 2, electric motors, or manual crank.
4—Hydraulic system No. 1 or No. 2.

9526. Which flight control is affected by the link force tab?

1—Ailerons.
2—Rudder.
3—Elevators.
4—Stabilizer.

9527. Which flight controls are interconnected through a mechanical linkage?

1—Rudder and elevators.
2—Ailerons and rudder.
3—Elevators and ailerons.
4—Flaps and ailerons.

9528. Which components are used to protect the flight control surfaces against wind gusts when the airplane is parked?

1—Hydraulic booster packages.
2—Force link tabs.
3—Control surface external blocks.
4—Locking pins at the control columns and rudder pedals.

9529. What action should be taken if No. 3 GEN MECH FAIL warning light comes on?

1—Feather the No. 3 propeller.
2—Disengage No. 3 generator.
3—Place No. 3 generator switch in the OFF position.
4—Disconnect all nonessential loads.

9530. In the event of an electrical fire in flight, which of the following actions should be accomplished before the A and B bus circuit breakers are pulled?

1—Generators – OFF.
2—Inverters – EMERGENCY.
3—Battery – OFF.
4—Nonessential load disconnect – OFF.

9531. In the event of an electrical fire in flight, which of the following actions should be accomplished after the A and B bus circuit breakers are pulled?

1—Inboards and one outboard generators OFF.
2—Booster shift controls OFF.
3—Emergency descent.
4—Fan/defog switches OFF.

9532. The a.c. electrical system is designed to isolate a generator from an individual bus unless the generator is operating with correct

1—voltage, amperage, and phase angle.
2—voltage and amperage.
3—amperage and generator speed.
4—voltage and frequency.

9533. Which electrical power selection should be made during the electrical fire procedure after turning OFF the nonessential load disconnect switches?

1—Generators Nos. 2 and 3 OFF.
2—Inverter switch OFF; generators Nos. 1, 2, and 3 OFF.
3—Generators Nos. 2, 3, and one outboard OFF.
4—Battery switch and all but one generator OFF.

9534. In the event one a.c. generator develops an undervoltage condition, the bus associated with this generator will

1—supply the low voltage to operating units until the bus isolation switch is activated.
2—be automatically switched to receive power from another generator.
3—have zero voltage until the generator is restored to normal operation.
4—have zero voltage until it is manually switched to a standby generator.

9535. Which fault will cause the No. 4 GEN GEARBOX and DISENGAGE lights to illuminate?

1—No. 4 generator tripped off.
2—No. 4 engine switched to high RPM.
3—No. 4 generator gearbox bearing failure.
4—No. 4 generator gearbox high oil temperature.

9536. After which type of failure will it be impossible to transfer a particular electrical load to an alternative generator?

1—Generator over– or under–frequency.
2—Feeder fault (generator to bus).
3—Generator overvoltage.
4—Bus fault.

9537. Before shutting down the last engine, the flight engineer should check

1—The emergency a.c. power supply.
2—that ground power is connected and producing correct voltage.
3—operation of the emergency brake pump and brake accumulator pressure.
4—positive closing of the pressurization outflow valve.

9538. How is operation of the emergency inverter checked during preflight?

1—Turn off both transformers.
2—Trip the inverter test circuit breaker.
3—Place the inverter switch to OFF.
4—Place the bus A and B switch to OFF.

9539. During normal flight operations, why should the inverter control switch be kept in the EMERGENCY position?

1—To keep the inverter running so that it will automatically power certain systems when essential d.c. power fails.
2—To prewarm the inverter amplifier so that the inverter will come on as soon as the switch is placed in the START position.
3—So that inverter output will be immediately available if essential a.c. bus power fails.
4—So that the loss of main d.c. bus power will cause the inverter to power the essential d.c. bus.

9540. Which component(s) show(s) the amount of electrical power being supplied to the aircraft's electrical system by the ground power unit?

1—The CONN and POWER lights.
2—The a.c. voltmeter when EXT power is selected.
3—Generator No. 4 ammeter.
4—All four generator ammeters when EXT power is selected.

9541. Which of the electrical protective devices can be manually reset and held on after having been actuated by an excessive current flow?

1—Slow acting fuses.
2—Voltage regulator.
3—Limit switches.
4—Nontrip free circuit breakers.

9542. Which type fault causes the bus to transfer but automatically reinstates the faulty generator to its bus again if the fault is only a temporary condition?

1—Under voltage fault.
2—Over or under frequency fault.
3—Feeder fault or shorted bus.
4—Over or under amperage.

9543. Which condition is indicated by a generator tripped light being illuminated?

1—The generator is de-energized.
2—The generator's normal bus is de-energized.
3—A feeder fault has caused the generator's control relay to open.
4—An under-frequency trip of the generator has occurred.

9544. During the transition from high RPM to low RPM, when do the a.c. buses transfer?

1—When No. 4 engine is stabilized at 10,000 RPM.
2—As the generator switches are placed in RESET.
3—As each engine (No. 1, 2, or 3) is down shifted.
4—When all engines are stabilized at 10,000 RPM.

9545. Which part of the electrical system has the potential of being fed by any one of the four generators?

1—Priority bus A.
2—Essential a.c. bus.
3—Ground operation bus.
4—Transformer/rectifier No. 2.

9546. Which generator can supply any one of the four buses in flight?

1—Generator No. 1 or No. 4.
2—Generator No. 1 or No. 3.
3—Generator No. 2 or No. 4.
4—Generator No. 4 only.

9547. Which is a feature of the electrical bus power system?

1—A single generator may power all four a.c. buses in flight.
2—A maximum of two generators may power a single bus at the same time.
3—Generator No. 4 and the ground power source may feed all buses on a split basis, each powering two of the four buses.
4—A maximum of three generators may be powering the buses at any one time.

9548. What is the purpose of the TEST position of the generator control switch?

1—To check residual voltage of the generator.
2—To check generator voltage without a load being connected.
3—To check generator voltage, amperage, and frequency before connecting the generator to a bus.
4—To check generator frequency and phase before applying the generator's output to a bus in parallel operation with another generator.

9549. What maintains a.c. system frequency during normal flight operations?

1—Constant-speed characteristic of the engines.
2—Generator constant-speed drive units.
3—Generator two-speed gearbox.
4—Generator control units.

9550. Which source of power is being used when the ground operation bus is the only one which is energized?

1—The battery.
2—The ground power unit.
3—The emergency inverter.
4—No. 4 generator with the engine operating in low RPM.

9551. Which d.c. power source is de-energized when the nonessential load disconnect switches are placed in the OFF position?

1—The main and essential d.c. buses.
2—The main d.c. bus only.
3—The essential d.c. bus only.
4—The main and ground operation d.c. buses.

9552. Which of the following receives power from the 115/120V, three-phase a.c. system and provides power to the essential d.c. bus?

1—Static exciter.
2—Transformer/rectifier.
3—Magnetic amplifier.
4—Rotary inverter.

9553. Each T/R has a separate ON-OFF control switch. When this switch is placed in the OFF position

1—it turns off the cooling fan which automatically turns off the T/R output.
2—it turns off the T/R output which automatically turns off the cooling fan.
3—it turns off the a.c. input to the T/R which automatically turns off the cooling fan.
4—the T/R output is disconnected from the d.c. buses, but the cooling fan continues to operate.

9554. The d.c. system normally includes a reverse current contactor (relay) which protects the system against an excess current flow from

1—the rectifier to the essential d.c. bus.
2—a d.c. bus to the T/R unit.
3—the battery to the T/R unit.
4—an a.c. bus to the voltage regulator.

9555. Direct current power is supplied to the electrical system by

1—two inverters.
2—the aircraft's d.c. generators.
3—two transformers.
4—two transformer/rectifier units.

9556. What is the duration of a fully-charged battery when operating the inverter?

1—5 minutes.
2—20 minutes.
3—1 hour.
4—2 hours.

9557. When should the flightcrew signal for the removal of ground power during the starting sequence?

1—When bleed air manifold pressure has increased to 30 PSI.
2—When aircraft generators are supplying the a.c. buses.
3—After starting at least one engine on each side of the aircraft.
4—After all engines have been started.

9558. When the ground crew connects the ground power unit, the CONN light illuminates but the POWER light does not. The output of the GPU is the proper voltage. The significance of this indication is that the ground power

1—output frequency is too high.
2—output is not of the proper phase.
3—output frequency is too low.
4—current is too high or too low.

9559. During preflight before the external power switch is turned on, the selector should be placed in the external power position to check the output of the ground power unit. The a.c. meter should then indicate

1—400 cps 117 ±5V.
2—117 ±5V.
3—110/220V.
4—400 cps 115/220V.

9560. What aircraft electrical power is required to connect an external power source to the aircraft's electrical system?

1—Main d.c. bus power.
2—Emergency inverter power.
3—Ground operation d.c. bus power only.
4—Essential d.c. bus power.

9561. Which action should be taken if the aircraft interior is too hot with the freon system on and calling for full cold during flight?

1—Place the auxiliary vent control in an OPEN position to admit cold outside air.
2—Place the engine bleed air valves in the OFF position.
3—Dump the EDC which is supplying hot air into the system.
4—Turn on either one or two cooling turbines, as required.

9562. Which action should be taken if the freon condenser pressure is above the desired maximum of 100 PSI?

1—Select INCR on both freon manual control switches.
2—Immediately place the freon system switch OFF.
3—Select INCR on both temperature selectors, then turn off the freon system switch when the compressor light goes out.
4—Place all freon switches OFF, then turn on the freon system switch when the compressor light comes on.

9563. Which action should be taken if the freon condenser pressure is below the desired minimum of 20 PSI?

1—Select a warmer temperature for both cabin and cockpit.
2—Manually close the condenser door a small amount.
3—Select a cooler temperature for both cabin and cockpit.
4—Manually open the condenser door to flight open position.

9564. What should be done if the freon condenser door remains in the GROUND OPEN position after takeoff?

1—Recycle the landing gear down, then up.
2—Shut down the freon system.
3—Limit airspeed to a maximum of 300 knots.
4—Close the door with the manual control switch.

9565. How is a cargo compartment overheat lockout condition reset?

1—Place the fan switch OFF, then trip and reset the respective cargo compartment heat circuit breaker.
2—After the overheat light goes out, trip and reset the fan control circuit breaker.
3—The cargo compartment heater must be reset on the ground.
4—The overheat lockout switches will reset automatically after the switches have cooled.

9566. If a duct heater overheat light illuminates, the locked-out heater may be reset by (after it has cooled)

1—tripping and resetting the respective duct heater control circuit breaker and turning off the duct heater switch or the fan switch.
2—actuating the switch at the heater, on the ground only.
3—turning off the cabin or flight station manual temperature control switch.
4—depressing the duct heaters manual override switch on the auxiliary air-conditioning panel.

9567. In the event of failure of both the automatic and electrically operated pressurization control systems, cabin pressure can be controlled or the cabin can be depressurized by the

1—cabin altitude selector.
2—manually controlled safety valve.
3—outflow valve override switch.
4—barometric selector.

9568. If a cabin compressor airflow or pressure ratio is too high, the flightcrew should

1—disconnect the compressor and reconnect after a suitable cooling period.
2—depressurize the cabin.
3—shut down the engine to which the compressor is attached.
4—open the dump valve.

9569. What should be done if cabin pressure fluctuates at a high rate of change?

1—Dump both engine-driven compressors.
2—Use the outflow valve switch and reduce use of the cooling turbine.
3—Rotate the AUX VENT selector to 100 percent OPEN position.
4—Use the safety valve control knob to manually control cabin pressure.

9570. Which action should be taken if an EDC high oil temperature warning light comes on in flight?

1—Open the oil cooler flap for the engine on which the EDC is mounted.
2—Increase use of the cooling turbine.
3—Dump the EDC; if the light remains on, disconnect the EDC.
4—Check the EDC oil pressure; if it is low, feather the propeller or disconnect the compressor.

9571. What would be the result of positioning the AUX VENT selector to OPEN – 100°, when the cabin pressure differential is at its maximum limit?

1—The cabin aux vent inlet valve would go full open but the flight station valve will not open until cabin pressure is less than 2.5 PSI.
2—Cabin pressure would escape out of the aux vent inlet valves.
3—The EDC's would be dumped, the outflow valve would open, and the freon condenser inlet door would open.
4—Ram air would immediately enter the cabin and over-pressurize the structure.

9572. What happens if the freon system is turned off with the expansion valves open, then turned back on shortly afterward?

1—Nothing, this is the normal method of turning off the system.
2—Liquid freon would enter the compressor causing an excessive load and tripping the compressor motor protector.
3—The open expansion valves will allow contaminants to enter the system.
4—The freon system would be very inefficient, because the condenser would be full of liquid and could not cool the airflow around the condenser.

9573. What action can be taken to control heat to the cockpit if the flight station program motor failed in the heat position?

1—Cycle the floor and wall heaters switch ON and OFF.
2—Hold the cockpit manual temperature control switch in INCR or DECR until the desired degree of heat is obtained.
3—Alternate the air cycle/cabin duct heat switch between ON and OFF.
4—Cycle the duct heaters switch between AUTO and OFF.

9574. What action should be taken if the difference between left and right EDC inlet pressure indicators exceeds 3" Hg. during flight?

1—Dump the compressor with the highest inlet pressure.
2—Disconnect the compressor with the highest inlet pressure.
3—Dump the compressor with the lowest inlet pressure.
4—Disconnect the compressor with the lowest inlet pressure.

9575. The freon condenser fan may be stopped in flight by

1—opening the fan motor circuit breaker on priority bus A.
2—turning the fan switch to OFF.
3—placing the condenser door switch to CLOSE momentarily.
4—opening the scissors switch relay circuit breaker on the 186 circuit breaker panel.

9576. If the cabin and cockpit temperature controllers fail outside of the freon demand range and freon operation is required, the correct procedure for starting the freon system is to

1—turn off all heater switches, place the freon switch to OFF and depress the manual start switch.
2—place the cabin and flight station automatic temperature selectors to full DECREASE, then depress the freon manual start switch and watch for a freon pressure rise.
3—place the condenser door switch to full OPEN then depress the manual start switch.
4—place either the cabin or flight station freon manual temperature control switch to INCR COOLING momentarily, then back to OFF, then depress the freon manual start switch.

9577. What condition is indicated if the cargo heat lights are on?

1—Cargo compartment heat is ON.
2—Cargo compartment heat has been cycled OFF due to an overheat condition.
3—Fire exists in the cargo compartment.
4—Cargo compartment heat has been cycled ON due to an under temperature condition.

9578. What would be the effect of turning off the fan switch during freon operation?

1—The fan switch has no control over the freon system.
2—The expansion valves would close and the freon compressor would stop.
3—The freon compressor would stop, but the expansion valves would stay in their last position.
4—The expansion valves would close, but the freon compressor will continue to operate.

9579. When starting the freon system in a heat-soaked aircraft (engines not operating), the freon system should be started

1—in the full 100 percent freon range to have the system operate efficiently.
2—in the full air cycle range to reduce the freon cooling load.
3—by manually starting the freon system with the manual start switch, then turning off the fan switch to decrease the airflow through the evaporators.
4—with the cabin temperature program indicator in the freon demand range, and the cabin manual switch OFF.

9580. What precaution must be observed before turning off the freon system switch?

1—The freon compressor indicator light must be out.
2—The freon condenser pressure must be below 12-1/2 PSI.
3—The cabin program indicator must be out of the freon range.
4—The condenser tunnel door must have cycled closed.

9581. The air cycle cooling system is affected by which control(s)?

1—The cabin temperature control system only.
2—The cabin and cockpit temperature control systems.
3—The cockpit temperature control and the cooling turbine switch.
4—The air cycle temperature control system only.

9582. Why should the cabin altitude selector on the pressure controller be set at least 300 ft. above the desired cruising altitude?

1—To assist in changing the cabin altitude if the aircraft is required to ascend to a higher altitude.
2—To prevent pressurization instability due to cabin pressure being maintained at the maximum limit.
3—To allow for any overshooting of the aircraft over the desired cruising altitude.
4—To prevent over-pressurization of the cabin.

9583. If a ground air-conditioning unit is required to supply conditioned air to the cabin, where may the unit be connected?

1—Ground recirculating blower air inlet.
2—Ground air-conditioner connection located in the air-conditioning service center.
3—Cabin auxiliary ventilation valve air inlet, inside the freon condenser tunnel.
4—Cabin pressure safety relief valve inlet.

9584. What areas of the cabin have radiant heat panels?

1—The entire cabin floor and the walls.
2—Only the aisle flooring.
3—The cabin floor under the seats and the cabin walls.
4—The entire cabin and cockpit floor and the cabin walls up to the top of the windows.

9585. Which components are sources of heat for the air-conditioning of the fuselage?

1—Bleed air, electric duct heaters, and radiant heat panels.
2—Engine-driven compressors, radiant heat panels, and duct heaters.
3—Vapor cycle heat pump, radiant heat floor and wall panels, and the heat of compression.
4—Electric resistance duct heaters, cabin compressors, and tailpipe heat exchanger.

9586. What means is used to obtain the initial reduction of air temperature in the cabin cooling system?

1—An air to air heat exchanger.
2—Expansion of air through the turbine.
3—A freon condenser.
4—An increase in airflow velocity.

9587. What source of power is used to rotate the cooling turbine?

1—Cabin supercharger (compressor) air.
2—115V, three-phase a.c.
3—Freon compressor motor.
4—Condenser discharge ram air.

9588. What is accomplished by rotating the AUX VENT selector from the CONT PRESS position to the AUX VENT O position?

1—Opening of the cabin and cockpit aux vent valves to permit ram airflow into the air distribution ducts.
2—Closing of the outflow valve and shutting off all airflow into the fuselage.
3—Shutting off all airflow into the fuselage and opening the outflow valve.
4—Opening the cabin aux vent valve but not until the selector is rotated to 30 percent or greater.

9589. Which sources can be used for air-conditioning air on the ground?

1—Gas turbine compressor bleed air or external air-conditioning unit.
2—Engine bleed air or engine-driven compressor.
3—External air-conditioning unit or engine-driven compressor.
4—Cabin air compressors, air cycle machine, or external bleed air generator.

9590. Which ventilation equipment is controlled by a switch in the flight compartment?

1—Electronic equipment cooling fan.
2—Lavatory ventilation fan.
3—Windshield defogging fan.
4—Recirculation fan and electronic equipment cooling fan.

9591. What is the effect on operation of the cabin and cockpit temperature controller if the manual temperature controls on the auxiliary air-conditioning panel are positioned OFF, but all other air-conditioning switches are normal?

1—The temperature controller would be inoperative.
2—The temperature controller would be limited in its range of operation.
3—The temperature controller is not affected by the manual temperature control switches.
4—The temperature controller overrides the action of the manual temperature control switches.

9592. Which form of air-conditioning is not possible when AUX VENT is selected?

1—Freon cooling.
2—Duct heater warming.
3—Radiant panel heating.
4—Air cycle cooling.

9593. Which is the correct sequence of components encountered by the cabin air as it flows through an air cycle cooling system?

1—Compressor; evaporator; heat exchanger; turbine.
2—Evaporator; turbine; heat exchanger.
3—Turbine; compressor; heat exchanger.
4—Heat exchanger; turbine.

9594. What is the function of the ground pressure switch located on the temperature control and indication panel?

1—Permits bypassing the scissor switches for a maintenance check of the outflow valve.
2—Prevents dumping the EDC's when the aircraft lands.
3—Eliminates cabin pressure bump after takeoff.
4—Permits operation of the pressurization system prior to takeoff.

9595. What should you check if a warning horn sounds intermittently while in cruise flight?

1—Outflow valve position.
2—Cabin altitude.
3—Differential pressure.
4—Stabilizer position.

9596. What pressurization system operation should be changed in the event that the cabin rate of climb is too fast?

1—The outflow valve should close faster.
2—The cabin compressor should increase speed.
3—The outflow valve should close slower.
4—The cabin compressor should decrease speed.

9597. What is the purpose of the ground pressure test switch on the temperature control and indication panel?

1—Test operation of the pressurization controls.
2—Test operation of the engine-driven compressors.
3—Test the automatic temperature control of the electric heating system.
4—Test the automatic temperature control of the cooling system.

9598. Which control positions are required when using an external ground source of conditioned air?

1—Aux vent 100 percent and fan switch AUTO.
2—Safety relief OPEN and EDC's dumped.
3—Aux vent ZERO and fan switch ON.
4—Aux vent 100 percent, safety relief OPEN, and fan switch OFF.

9599. What correction is made if cabin altitude becomes greater than the pressure altitude?

1—Closing the outflow valve.
2—Opening the positive pressure emergency relief valve.
3—Opening the negative pressure relief valve.
4—Disconnecting a supercharger (compressor) drive.

9600. When will the negative pressure relief valve open during descent?

1—When the aircraft altitude becomes equal to the cabin altitude.
2—When the aircraft altitude becomes less than the cabin altitude.
3—When the aircraft altitude becomes greater than the cabin altitude.
4—When the cabin pressure controller is reset.

9601. The function of the cabin negative pressure relief valve is to

1—prevent atmospheric pressure exceeding cabin pressure.
2—prevent exceeding 2.04" Hg. differential pressure when on the ground.
3—prevent a pressure differential between the main cabin and the lower cargo compartments.
4—prevent landing with a positive cabin pressure.

9602. The function of the cabin pressure relief valve is to

1—start to open at a cabin differential pressure of 13.9" Hg. in flight.
2—prevent exceeding 8,000 ft. cabin altitude.
3—prevent external atmospheric pressure exceeding internal cabin pressure.
4—limit cabin differential pressure to a maximum of 1.5 PSI on the ground.

9603. If the cabin pressure safety relief valve is set to open at 6.5 PSI pressure differential, at approximately what cabin pressure will it open if the outside atmospheric pressure is 14.45 inches of mercury?

1—21.0 PSI.
2—21.0" Hg.
3—27.5 PSI.
4—27.5" Hg.

9604. What is the effect of running the outflow valve partially open, then placing the outflow valve switch to OFF during flight?

1—The outflow valve will be limited in its range of operation by the pneumatic system.
2—The outflow valve will be locked in the partially open position.
3—The outflow valve will be locked in the partially open position, but electric control will still be available.
4—The pneumatic system will take over and be able to control the system normally.

9605. How may the EDC be disconnected from the reduction gearbox in flight?

1—The EDC will disconnect automatically when the pressure ratio is exceeded.
2—The EDC will disconnect in the event of engine decoupling.
3—By actuation of a guarded cockpit switch.
4—By selecting AUX VENT in the 100 percent position.

9606. What is the effect if the outflow valve switch is held in the CLOSED position after landing?

1—The outflow valve will run toward the closed position, because the manual outflow switch overrides all other signals.
2—The outflow valve will remain full open because the circuit is controlled by the landing gear ground safety switches.
3—The outflow valve will be run toward the closed position by the pneumatic actuator.
4—The outflow valve will be run full closed due to action of the electrical actuator.

9607. How can an engine-driven compressor be reconnected after a disconnect switch has been activated?

1—Placing the disconnect switch back to normal.
2—Dumping the compressor, then placing the disconnect switch back to normal.
3—Manually on the ground with the engine stationary.
4—Feathering the propeller then placing the disconnect switch to normal.

9608. How is the flow of air out of the cabin compressors controlled?

1—Variable speed of the compressor impeller.
2—Variable dump valve opening.
3—Constant-speed drive.
4—Variable vanes on the compressor inlet.

9609. What happens to the cabin compressor air when it is not required for pressurization such as when operating in AUX VENT? It is

1—exhausted overboard through the dump valve.
2—exhausted through the outflow valve which is held wide open.
3—vented back to the engine inlet.
4—recirculated to the cabin compressor inlet.

9610. Which ventilation equipment is controlled by a switch in the flight compartment?

1—Electronic equipment cooling fan.
2—Lavatory ventilation fan.
3—Windshield defogging fan.
4—Recirculation fan and electronic equipment cooling fan.

9611. At which point in the pressurization system is airflow regulated to control cabin pressure?

1—Input to the EDC's.
2—Output of the EDC's.
3—Exhaust from the fuselage.
4—Inlet to the cabin.

9612. What is the approximate maximum altitude at which a sea level cabin pressure can be maintained?

1—8,000 ft.
2—10,000 ft.
3—15,000 ft.
4—30,000 ft.

9613. Air for the cabin pressurization system is supplied by two engine-driven superchargers (compressors) which are located on engines

1—Nos. 1 and 4; they can maintain a cabin altitude of sea level to an aircraft altitude of 18,000 ft.
2—Nos. 2 and 3; they can maintain a cabin altitude of sea level at an aircraft altitude of 18,000 ft.
3—Nos. 1 and 4; they can maintain a cabin altitude of 8,000 ft. at an aircraft altitude of 30,000 ft.
4—Nos. 2 and 3; they can maintain a cabin altitude of 5,500 ft. at an aircraft altitude of 25,000 ft.

9614. Which control position is proper during the preflight check when ready to start engines?

1—Gear lever – Neutral – 3 green.
2—Pitot heaters – ON.
3—DC hydraulic pump switch – OFF.
4—Temperature datum control switch – NORMAL.

9615. Which control position is proper during preflight check when ready to start engines?

1—Hydraulic cooling switch – ON.
2—Emergency shutdown handles – OUT.
3—Voice recorder – OFF.
4—Temperature trim switches – LOCKED.

9616. Which control position is proper during the preflight check when ready to start engines?

1—Temperature datum control switch – CONTROLLING.
2—Inverter switch – OFF.
3—Flight recorder – SET and ON.
4—Windshield heat – LOW.

9617. Which part of the preflight check should be noted in the logbook?

1—NTS system check.
2—Autofeather check.
3—Engine starting temperature peak.
4—Fuel distribution.

9618. What check should be made of the fire-extinguishing system during the walk-around inspection?

1—Volume of carbon dioxide in the containers.
2—Air preload pressure in the fire-extinguisher bottles.
3—Rigging of discharge cables.
4—Bottle pressures relative to ambient temperature limits.

9619. During the walk-around inspection, proper operation of the electronics equipment cooling system should be checked. Where is the cooling air vented?

1—Into the cabin mixing valve.
2—Overboard through a venturi or nozzle.
3—Into the area surrounding the lower baggage compartments.
4—Overboard through the outflow valve.

9620. What will occur in the event that auxiliary (ambient) ventilation is selected while at cruising altitude?

1—Rapid decompression.
2—Increased cooling efficiency.
3—Overspeeding of the cabin supercharger (compressor).
4—Cabin altitude will be reduced.

9621. How can first aid oxygen be obtained for passenger use at a cabin altitude of 5,000 ft.?

1—Use the normal passenger outlet after manually opening the altitude control valve.
2—Use a continuous-flow mask and the cabin portable bottle.
3—Use a demand mask and the cabin portable bottle with the regulator set for emergency.
4—Use the flight deck full-face mask and either a portable bottle or the normal passenger oxygen outlet.

9622. What will cause the emergency exit lights to come on with the switch in the ARMED position?

1—Loss of main d.c. bus power.
2—Loss of essential a.c. bus power.
3—Removing the light from its mounting fixture.
4—Placing the inverter switch in the EMERGENCY position.

9623. Which is an indication that one bottle of the cabin oxygen system has been discharged because of excessive bottle pressure?

1—Red disc missing at overboard discharge location.
2—Pressure gauge at altitude control valve indicates less than 1,800 PSI.
3—Green disc missing at overboard discharge location.
4—No automatic oxygen flow when cabin altitude exceeds 10,000 ft.

9624. Which action should be taken when cabin oxygen is no longer needed?

1—Turn off the valves on both cabin oxygen bottles.
2—Manually turn off the valves at each passenger outlet which had been in use.
3—Depress the reset and close the manual lever at the altitude control valve.
4—Remove all passenger masks which had been used and check that the altitude control valve has automatically closed.

9625. During the preflight check of the oxygen mask and regulator, what is an indication of proper operation with the regulator in 100 percent and the supply off?

1—Oxygen flow should be indicated while inhaling.
2—No air or oxygen available.
3—Ambient air is admitted through the regulator.
4—No oxygen flow, but filtered cockpit air is admitted through the regulator.

Table 16

OPERATING CONDITIONS	1	2	3
Basic Operating Weight	61,300	59,350	63,800
Maximum Zero Fuel Weight	86,000	82,500	86,000
Maximum Landing Weight	95,650	95,650	95,600
Maximum Takeoff Weight	116,000	113,000	116,000
Fuel Tank Load	36,000	33,100	38,500
Estimated Fuel Burn	27,900	10,750	20,800

9626. What is the maximum payload under operating conditions No. 1, Table 16?

1—18,250 lb.
2—18,700 lb.
3—24,700 lb.
4—26,800 lb.

9627. What is the maximum payload under operating conditions No. 2, Table 16?

1—13,150 lb.
2—13,950 lb.
3—18,250 lb.
4—26,650 lb.

9628. What is the maximum payload under operating conditions No. 3, Table 16?

1—9,650 lb.
2—13,700 lb.
3—17,500 lb.
4—22,200 lb.

9629. Which selection of the oxygen control lever is used to prevent flight deck air from entering the crew oxygen regulator?

1—Diluter lever, 100 percent.
2—Supply lever, ON.
3—Emergency lever, NORMAL.
4—Supply lever, OFF.

9630. Below which altitude is passenger oxygen not available through the integral system?

1—5,000-foot aircraft altitude.
2—8,000-foot cabin altitude.
3—10,000-foot cabin altitude.
4—14,000-foot aircraft altitude.

9631. What is the new CG position after the weight is moved from the aft to the forward location under operating conditions No. 1, Table 17?

1—27.5 percent.
2—29.8 percent.
3—31.2 percent.
4—36.4 percent.

9632. What is the new CG position after the weight is moved from the forward to the aft location under operating conditions No. 2, Table 17?

1—12.4 percent.
2—21.1 percent.
3—28.4 percent.
4—29.3 percent.

9633. What is the new CG position after the weight is moved from the aft to the forward location under operating conditions No. 3, Table 17?

1—28.7 percent.
2—29.9 percent.
3—31.7 percent.
4—33.1 percent.

Table 17

OPERATING CONDITIONS		1	2	3
Takeoff Weight		114,000	102,000	108,000
Original CG - %MAC		32.0	20.4	31.5
Length of MAC		168.7	168.7	168.7
LEMAC		545.9	545.9	545.9
Weight Moved		1,500	2,400	500
Cargo Locations	FWD	313.0	313.0	313.0
	AFT	885.0	885.0	885.0

Table 18

OPERATING CONDITIONS		1	2	3
Takeoff Weight		113,000	106,000	110,500
Original CG --	%MAC	20.5	33.5	19.9
Length of MAC		168.7	168.7	168.7
LEMAC		545.9	545.9	545.9
Affected CG Limit	%MAC	22.0	32.0	21.8
Cargo Locations	FWD	313.0	313.0	313.0
	AFT	885.0	885.0	885.0

9634. What minimum weight of cargo must be shifted from the forward to the aft cargo location to bring the CG within limits under operating conditions No. 1, Table 18?

1—240 lb.
2—500 lb.
3—2,372 lb.
4—4,990 lb.

9635. What minimum weight of cargo must be shifted from the aft to the forward cargo location to bring the CG within limits under operating conditions No. 2, Table 18?

1—278 lb.
2—470 lb.
3—500 lb.
4—4,690 lb.

9636. What minimum weight of cargo must be shifted from the forward to the aft cargo location to bring the CG within limits under operating conditions No. 3, Table 18?

1—620 lb.
2—645 lb.
3—945 lb.
4—6,350 lb.

9637. What is the new CG position after adding weight under operating conditions No. 1, Table 19?

1—7.1 percent.
2—18.0 percent.
3—19.5 percent.
4—23.6 percent.

9638. What is the new CG position after adding weight under operating conditions No. 2, Table 19?

1—18.8 percent.
2—21.9 percent.
3—23.0 percent.
4—23.6 percent.

9639. What is the new CG position after adding weight under operating conditions No. 3, Table 19?

1—10.4 percent.
2—18.3 percent.
3—20.8 percent.
4—24.7 percent.

9640. In which cabin altitude range is it necessary to manually open the control valve to obtain oxygen flow through the cabin integral oxygen system?

1—5,000 to 14,000 ft.
2—8,000 to 14,000 ft.
3—8,000 to 20,000 ft.
4—10,000 to 20,000 ft.

Table 19

OPERATING CONDITIONS		1	2	3
Original Weight		100,000	102,500	98,700
Original CG --	%MAC	13.1	28.7	17.6
Length of MAC --	%MAC	168.7	168.7	168.7
LEMAC - STA		545.9	545.9	545.9
Weight Added		3,500	3,650	4,000
Location Added --	STA	885.0	313.0	885.0

Table 20

OPERATING CONDITIONS	1	2	3
Original Weight	116,000	110,000	113,000
Original CG - %MAC	31.5	23.2	29.7
Length of MAC	168.7	168.7	168.7
LEMAC -- STA	545.9	545.9	545.9
Weight Removed	2,500	3,100	3,800
Location of Weight Removed	885.0	313.0	885.0

9641. What is the new CG position after removing the weight under operating conditions No. 1, Table 20?

1—25.3 percent.
2—27.8 percent.
3—31.1 percent.
4—35.2 percent.

9642. What is the new CG position after removing the weight under operating conditions No. 2, Table 20?

1—18.5 percent.
2—23.7 percent.
3—27.9 percent.
4—28.3 percent.

9643. What is the new CG position after removing the weight under operating conditions No. 3, Table 20?

1—21.8 percent.
2—23.7 percent.
3—29.1 percent.
4—35.7 percent.

9644. What is the loaded CG in percent MAC under operating conditions No. 1, Table 21?

1—25.4 percent.
2—28.7 percent.
3—29.3 percent.
4—30.5 percent.

9645. What is the loaded CG in percent MAC under operating conditions No. 2, Table 21?

1—19.4 percent.
2—21.8 percent.
3—22.3 percent.
4—23.2 percent.

9646. What is the loaded CG in percent MAC under operating conditions No. 3, Table 21?

1—28.9 percent.
2—29.9 percent.
3—30.5 percent.
4—32.0 percent.

Table 21

OPERATING CONDITIONS		1	2	3
Basic Operating Weight (BOW)		61,310	62,700	59,340
BOW CG -- %MAC		24.0	15.5	26.5
Passengers	FWD (STA 300.0)	2,890	1,700	2,550
	AFT (STA 654.0)	12,070	8,500	10,540
Cargo	FWD (STA 313.0)	500	3,800	1,000
	AFT (STA 885.0)	700	1,000	100
Fuel 1 & 4	(STA 605.7)	7,300 ea.	7,370 ea.	10,500 ea.
2 & 3	(STA 628.4)	7,300 ea.	11,122 ea.	10,500 ea.
MAC	168.7			
LEMAC	545.9			

Table 22

OPERATING CONDITIONS		1	2	3
Departure Airport Elevation	FT.	1,000	2,000	1,500
Pressurization Start FT. above Airport		500	1,000	---
Cruising Altitude	FT.	20,000	22,000	25,000
Desired Cabin Altitude	FT.	8,000	7,000	8,000
Aircraft Rate of Climb	FT./MIN.	750	800	1,900

9647. When combating a fire in a lower cargo compartment, which is an important item to perform before discharging the fire extinguisher?

1—Increase the flow of ventilating air in the compartment.
2—Depressurize by pulling the master emergency depressurization lever.
3—Switch all oxygen controls to the DEMAND position.
4—Turn off the fire-detection system for the compartment.

9648. Which action should be taken during the passenger cabin smoke evacuation procedure?

1—Maintain a high degree of cabin pressurization and open the ports between the passenger cabin and the lower cargo compartments.
2—Maintain a small degree of cabin pressurization.
3—Open an emergency exit over the wing after depressurizing.
4—Open a flight compartment window and the pressurization emergency relief valves.

9649. The elimination of a heavy concentration of smoke from the passenger compartment should be accomplished by

1—opening a flight deck window and then opening an emergency exit over the wing.
2—turning on the recirculating fans of the air-conditioning system.
3—lowering the cabin altitude.
4—opening an emergency exit over the wing after depressurizing.

9650. Which condition requires that the fire-extinguisher selector for an engine be pushed full-in after it had been pulled completely out?

1—If the second bank of extinguishant is to be discharged.
2—If the engine does not stop rotating, to restore lubrication.
3—If the bell and lights do not go out after the fire is extinguished.
4—If the bottles were not discharged and fire occurs in another area.

9651. If a wing airfoil heater fire warning light illuminates while in cruise, which procedure should be followed?

1—All flight crewmembers must put on oxygen masks before the agent is discharged to the fire zone.
2—Immediately push in and hold the agent discharge button for the affected heater.
3—Turn off the master switch for the affected heater, depress the selector button, and depress the discharge button.
4—Turn off the master switch by pulling the gang bar and pull the discharge handle.

9652. What cabin rate of climb is required to reach cruising altitude and desired cabin altitude at the same time under operating conditions No. 1, Table 22?

1—264 ft./min.
2—300 ft./min.
3—281 ft./min.
4—313 ft./min.

9653. What cabin rate of climb is required to reach cruising altitude and desired cabin altitude at the same time under operating conditions No. 2, Table 22?

1—153 ft./min.
2—169 ft./min.
3—195 ft./min.
4—206 ft./min.

9654. What cabin rate of climb is required to reach cruising altitude and desired cabin altitude at the same time under operating conditions No. 3, Table 22?

1—500 ft./min.
2—527 ft./min.
3—605 ft./min.
4—650 ft./min.

Table 23

OPERATING CONDITIONS		1	2	3
Aircraft Weight - Start Dump	LB.	102,000	96,500	100,100
Zero Fuel Weight	LB.	83,200	72,700	76,150
Dump Rate	LB./MIN.	2,736	2,736	2,736
Dump Time	MIN.	5.6	7.2	6.9
Fuel Flow	LB./HR./ENG.	495	715	545
Engines Operating During Dump		4	3	4

9655. How much fuel remains after dumping under operating conditions No. 1, Table 23?

1—450 lb.
2—710 lb.
3—2,917 lb.
4—3,294 lb.

9656. How much fuel remains after dumping under operating conditions No. 2, Table 23?

1—626 gal.
2—640 gal.
3—3,756 lb.
4—3,950 lb.

9657. How much fuel remains after dumping under operating conditions No. 3, Table 23?

1—810 gal.
2—910 gal.
3—4,833 lb.
4—5,023 lb.

9658. How much fuel remains after cruising under operating conditions No. 1, Table 24; according to the cruise chart? (See Figure 40.)

1—3,050 gal.
2—3,200 gal.
3—18,740 lb.
4—18,930 lb.

9659. How much fuel remains after cruising under operating conditions No. 2, Table 24; according to the cruise chart? (See Figure 40.)

1—2,150 gal.
2—2,210 gal.
3—12,680 lb.
4—12,860 lb.

9660. How much fuel remains after cruising under operating conditions No. 3, Table 24; according to the cruise chart? (See Figure 40.)

1—1,020 gal.
2—1,224 gal.
3—7,245 lb.
4—7,655 lb.

Table 24

OPERATING CONDITIONS		1	2	3
Beginning Total Weight	LB.	97,520	88,500	95,400
Zero Fuel Weight	LB.	68,450	69,700	80,100
Pressure Altitude		14,000	17,000	19,000
1200 BHP Cruise Time		1:25	:40	:55
1100 BHP Cruise Time		1:40	2:15	1:35
1000 BHP Cruise Time		2:10	--	1:20

STANDARD CRUISE POWER TABLE

PRESSURE ALTITUDE FEET	BLOWER	RPM	BMEP	BMEP DROP	SPARK	FUEL FLOW lbs/hr/engine
1200 Brake Horsepower						
0 - 3,000	LOW	2200	154	12	Cruise	545
3,001 - 6,000	LOW	2200	154	12	Cruise	545
6,001 - 9,000	LOW	2200	154	12	Cruise	545
9,001 - 12,000	LOW	2200	154	12	Cruise	545
12,001 - 14,000	LOW	2200	154	12	Cruise	545
14,001 - 16,000	LOW	2300	148	12	Cruise	555
15,001 - 21,000	HIGH	2300	148	12	TO&CL	575
1100 Brake Horsepower						
0 - 3,000	LOW	2100	148	12	Cruise	495
3,001 - 6,000	LOW	2100	148	12	Cruise	495
6,001 - 9,000	LOW	2100	148	12	Cruise	495
9,001 - 12,000	LOW	2100	148	12	Cruise	495
12,001 - 14,000	LOW	2100	148	12	Cruise	495
14,001 - 16,000	LOW	2200	142	12	Cruise	505
15,001 - 17,000	HIGH	2100	149	12	*Cruise	510
17,001 - 20,000	HIGH	2200	142	12	*Cruise	520
20,001 - 24,000	HIGH	2300	135	12	TO&CL	535
1000 Brake Horsepower						
0 - 3,000	LOW	1850	153	12	Cruise	440
3,001 - 6,000	LOW	1850	153	12	Cruise	440
6,001 - 9,000	LOW	1850	153	12	Cruise	440
9,001 - 12,000	LOW	1950	145	12	Cruise	445
12,001 - 15,000	LOW	2100	135	12	Cruise	455
15,001 - 18,000	LOW	2200	129	12	Cruise	465
15,001 - 18,000	HIGH	2100	135	12	*Cruise	470
18,001 - 21,000	HIGH	2200	129	12	*Cruise	480
21,001 - 24,000	HIGH	2300	123	12	TO&CL	495

Figure 40

Table 25

OPERATING CONDITIONS	1	2	3
CAT	86° F	95° F	20° C
Dew Point	40° F	90° F	13° C
ADI	ON	ON	OFF

9661. What is the takeoff power setting under operating conditions No. 1, Table 25; according to the Takeoff Power Schedule? (See Figure 41.)

1—59.5" manifold pressure.
2—234 BMEP.
3—54.7" manifold pressure.
4—204 BMEP.

9662. What is the takeoff power setting under operating conditions No. 2, Table 25; according to the Takeoff Power Schedule? (See Figure 41.)

1—54.5" manifold pressure.
2—200 BMEP.
3—190 BMEP.
4—60.9" manifold pressure.

9663. What is the takeoff power setting under operating conditions No. 3, Table 25; according to the Takeoff Power Schedule? (See Figure 41.)

1—206 BMEP.
2—236 BMEP.
3—59.9" manifold pressure.
4—55.6" manifold pressure.

9664. In the event of a brake fire while on the ground, which action should be taken?

1—Discharge the appropriate engine CO_2 system after feathering the engine.
2—Shut down all engines, evacuate the passengers, and combat the fire with CO_2 type hand fire extinguishers.
3—Maintain sufficient RPM on the engine in front of the fire to keep the flames under control.
4—Idle the engine in front of the fire and discharge the Zone 3 CO_2 system.

9665. If the fire-extinguishing system has been used on No. 1 engine, what action must be taken to discharge extinguishant to the aft baggage compartment?

1—Push the No. 1 engine selector full-in, pull the aft baggage selector full-out, then pull the handle for the other bank of extinguishant.
2—Pull the aft baggage selector full-out, then pull the handle for the other bank of extinguishant.
3—Pull the aft baggage selector to cutoff ventilating air flow to the compartment; do not discharge extinguishant.
4—Push the No. 1 engine selector in to the spring stop, pull the aft baggage selector out, then pull the handle for the second bank.

9666. What is indicated when a yellow disc associated with the fire protection system is missing?

1—The detection system thermocouple has been activated by excessive heat.
2—The system has been discharged from the flight deck.
3—Nitrogen must be added to the CO_2 containers.
4—Pressure in the extinguisher bottle had become excessive.

9667. What happens when the engine emergency shutoff (fire selector) control is actuated?

1—Flow of fuel from the booster pump to the fuel pump is blocked.
2—Generator cooling air blast duct is opened.
3—Flow of all oil from the oil tank is blocked.
4—The hydraulic pump outlet (pressure) line is closed.

9668. Into which zone(s) of the powerplant can the fire extinguisher be discharged?

1—Zones 2 and 3 only.
2—Zones 1 and 2 only.
3—Zones 1, 2, and 3.
4—Zone 2 only.

9669. Which fuselage areas are protected by the fire-extinguisher cylinders located in the nose section?

1—Forward baggage, aft baggage, and hydraulic accessories compartment only.
2—Forward baggage, aft baggage, hydraulic accessories compartment, heater compartment, and tail anti-icing heater only.
3—Forward baggage, aft baggage, and main cabin heater only.
4—Forward baggage, aft baggage, hydraulic accessories compartment, and heater compartment only.

9670. What fire-extinguishing agent is contained in the fixed fire-extinguishing system?

1—Freon.
2—Dry chemical.
3—Carbon dioxide.
4—CB (bromochloromethane).

9671. What is a most likely trouble if a Zone 1 fire warning light comes on?

1—Broken exhaust stack.
2—Cracked baffle plate.
3—Broken engine fire seal ring.
4—Blown exhaust valve.

DC-6B Power Schedule
P&W R-2800 CB-16 Wet Takeoff
BMEP at Various Conditions of Temperature & Humidity
2800 RPM, Sea Level, ADI ON

MANIFOLD PRESSURE *	DEW POINT TEMPERATURE °C	°F	CARBURETOR AIR TEMPERATURE 10°C 50°F	15°C 59°F	20°C 68°F	25°C 77°F	30°C 86°F	35°C 95°F	40°C 104°F
59.6	-4	25	244	242	240	238	235	233	231
59.7	-1	30	244	242	239	238	235	233	231
59.7	1	35	243	241	239	237	234	232	230
59.7	4	40	242	240	238	236	234	232	230
59.8	7	45	242	240	238	236	233	231	229
59.8	10	50	241	239	237	235	233	231	228
59.9	13	55		238	236	234	232	230	228
60.0	16	60		238	235	234	231	229	227
60.1	18	65			234	233	230	228	226
60.2	21	70			233	232	229	227	225
60.4	24	75				230	228	226	224
60.5	27	80				228	226	224	222
60.7	29	85					224	222	220
60.9	32	90						220	218

* 59.5" OF MANIFOLD PRESSURE PLUS EXISTING VAPOR PRESSURE, UP TO 1.5".

SPECIAL NOTE - FOR CB-16 DRY TAKEOFF POWER SCHEDULE APPLY THE FOLLOWING:

RPM=2700

SUBTRACT APPROXIMATELY 30 BMEP FROM THE ABOVE SETTINGS.

SUBTRACT APPROXIMATELY 5 INCHES OF MANIFOLD PRESSURE FROM THE ABOVE SETTINGS.

Figure 41

9672. What feature of a thermocouple causes the fire warning system to actuate?

1—Heat decreases its electrical resistance.
2—The thermocouple expands when heated and forms an electrical ground for the warning light and bell circuits.
3—Heat increases its electrical resistance.
4—The thermocouple generates a small current when it becomes hot.

9673. How is a fire-detection system rearmed after having been activated by a fire?

1—The reset switch must be used to rearm the system.
2—The system resets automatically after cooling below warning temperatures.
3—The warning lights can be turned off and the bell silenced by the test switch.
4—The system resets automatically after a fire extinguisher has been emptied.

9674. The fire warning bell sounds but no fire warning light illuminates. How can you determine the location of the possible fire?

1—Press the fire warning light bulb covers. If a light comes on, it indicates the area of possible fire.
2—Check the carburetor air temperature gauges. If an engine fire has occurred, the CAT will be excessive.
3—Actuate each extinguisher in turn. When you have actuated the correct system, the bell will stop ringing.
4—Actuate the warning light test switch or buttons. A light which does not illuminate indicates the possible fire location.

9675. Which power source is required for operation of the engine fire-detector system?

1—Secondary d.c. bus.
2—Battery only.
3—Thermocouple only.
4—26V, 3-phase, a.c. transformer.

9676. What source provides power to operate the emergency exit lights?

1—The aircraft battery.
2—Batteries contained in each light.
3—A transformer/rectifier located at each light-mounting fixture.
4—The emergency inverter.

9677. Which actions are recommended for ditching?

1—Dump fuel and depressurize by opening the main outflow valve.
2—Open flightcrew windows to depressurize and put landing gear down.
3—Maintain pressurization and keep all outlet valves closed.
4—Dump all fuel from inboard tanks and shutdown the inboard engines.

9678. Which action should be taken immediately before touchdown during an emergency gear-up landing?

1—Engine fire extinguishers, discharge.
2—Fuel valves, off.
3—Emergency exits and cabin doors, open.
4—Electrical master bar, off.

9679. During takeoff, the emergency exit light switch(es) should be in the

1—OFF position.
2—ARMED position.
3—ON and TEST position.
4—DISARMED position.

9680. How do you operate a carbon dioxide portable fire extinguisher?

1—Raise the nozzle upward, aim at the base of the fire, and press the trigger.
2—Rotate the handle clockwise, and depress the trigger.
3—Aim the nozzle at the fire and rotate the valve on top of the bottle.
4—Invert the cylinder and aim the extinguishant stream at the base of the fire.

9681. How is the slide deployed at the door for passenger evacuation?

1—Open the door manually, the slide will deploy automatically.
2—Attach the slide straps to the doorframe wedges, open the door, and kick the slide out.
3—Pull the release handle after the door is open, so that the slide will inflate with nitrogen.
4—Open the door, pull the slide from the container, attach the straps to the doorframe, and push the slide out.

9682. What action should be taken if a feathered engine rotates slowly in the normal direction of rotation?

1—Actuate the propeller toggle switch to DEC RPM position.
2—Open the oil valve which had been closed after feathering.
3—Unfeather until the rotation stops.
4—Unfeather to idle RPM to prevent further damage to the engine.

9683. Which is an abnormal indication after the autofeathering of one propeller?

1—Feather button is in neutral with red light out.
2—Three autofeather green lights remain on.
3—All autofeather green lights are out.
4—Autofeather master switch remains in automatic feathering.

9684. What should be done if all RPM's are hunting or surging?

1—Tachometer isolation switches – emergency.
2—Master lever – calibrate.
3—Propeller toggle switches – off.
4—Synchronizer system circuit breaker – off.

9685. What action should the flightcrew take if a propeller accidentally goes into reverse pitch during flight?

1—Place the throttle in reverse idle and the mixture control in idle cutoff.
2—Place the throttle in forward idle and feather the propeller.
3—Place the throttle in reverse idle and feather the propeller.
4—Place the throttle in forward high power, trip the prop reverse circuit breakers, and then feather the propeller.

9686. How should the propellers be adjusted for climbing flight after a takeoff?

1—Use the toggle switch for each prop to obtain climb RPM.
2—Reduce RPM with the master lever and press the resync button, if needed.
3—Reduce manifold pressure with the throttles, then press the resync button, if needed.
4—Pull the master RPM control lever back until master engine is at desired RPM, then trim other engines as required with toggle switches.

9687. What action should the flightcrew take if an engine overspeed cannot be controlled by a reduction of power?

1—Move the mixture to idle cutoff.
2—Switch to the alternate master engine.
3—Feather the propeller.
4—Pull the fire control and discharge one bottle of extinguishant to the engine.

9688. What position of a propeller control is correct during takeoff?

1—Master RPM control lever – calibrate.
2—Toggle switch – hold in inc RPM.
3—Master engine selector – manual.
4—Prop deicer switch – off.

9689. How is the feathering check accomplished?

1—With the engine operating at 1,500 to 1,700 RPM.
2—At idling speed.
3—With the engine operating at magneto check speed.
4—Before starting the engine.

9690. When checking the propellers by operating the toggle switches, you should observe the proper change of RPM and operation of which lights?

1—The autofeather lights.
2—The reverse pitch lights.
3—The governor limit lights.
4—The master lever lights.

9691. How can you determine whether a propeller is in a forward or reverse pitch position prior to takeoff?

1—Turn on the propeller electric deicer; if there is no amperage draw, the propeller is in reverse pitch.
2—Press the propeller toggle switch forward; if the INC RPM indicator light comes on, the propeller is in forward pitch.
3—Press the feathering button; if the RPM increases, the propeller is in reverse pitch.
4—Pull out the feathering button; if the RPM decreases, the propeller is in reverse pitch.

9692. Which action is required to obtain manual deicing of No. 1 propeller?

1—Prop deicer switch – on; No. 1 prop deicer transfer switch – manual.
2—Prop deicer switch – manual; prop deicer ammeter selector – No. 1.
3—Prop deicer switch – manual; No. 1 prop deicer transfer switch – manual.
4—No. 1 prop deicer transfer switch – manual; prop deicer ammeter selector – No. 1.

9693. What limitation is imposed on propeller deicing operation on the ground?

1—Engine running, automatic – three complete cycles.
2—Engine running, manual – 1 minute.
3—Engine not running, automatic – 10 seconds.
4—Engine not running, manual – not allowed.

9694. Which is normally true concerning the function and operation of the propeller electric deicing system?

1—The heating elements cannot be checked during ground operation.
2—The timer may be operated at fast, medium, or slow speeds depending upon icing rate.
3—High amperage may be selected for heavy icing and low amperage for light icing.
4—The system is deactivated during feather pump operation.

9695. How are the blades heated in an electric propeller deicing system?

1—Sufficiently to melt leading edge ice and prevent runback to the trailing edge.
2—Intermittently to keep blade temperature above 32° F.
3—Only enough to prevent ice formation.
4—In a timed sequence to throw off accumulated ice.

9696. The master and two engines are operating at 2,200 RPM and the other engine is 100 RPM slower. How can synchronization of all engines, by means of the resynchronization button, be accomplished?

1—By holding down the button until all engines are the same RPM.
2—By holding down the button and adjusting the master lever.
3—By pressing and releasing the button at least twice.
4—By pressing the button once if the master lever is in manual position.

9697. During cruising flight with all engines at 2,300 RPM, with synchronization on, you use the propeller toggle switch to change the master engine from 2,300 RPM to 2,100 RPM. What will happen to the slave engines?

1—They will reduce to 2,230 RPM.
2—They will reduce to 2,100 RPM.
3—They will remain at 2,300 RPM.
4—They will reduce to exactly 2,237 RPM.

9698. What is the effect of moving the master RPM control lever full forward?

1—All propellers are changed to the same low-pitch blade angle as the master engine propeller.
2—All engine RPM's are calibrated at 2,800 RPM.
3—All governors change to their individual full high RPM setting.
4—All propellers change to the full low-pitch stop setting.

9699. What positions are available on the prop master selector switch?

1—Eng. No. 1, Eng. No. 2, manual, off.
2—Eng. No. 2, manual, Eng. No. 3.
3—Resync, manual, auto.
4—Either inboard engine auto, calibrate, off.

9700. Which statement is correct concerning the Hamilton Standard propeller synchronization system?

1—When the master control lever is moved to a new position, all propellers synchronize automatically.
2—When the synchronizer system is off or inoperative, the propellers can be synchronized with the toggle switches.
3—When the master control lever is moved full forward, each propeller moves to full high pitch.
4—During synchronizer operation, either No. 1 or 4 engine must be selected as the master.

9701. When the autofeather green lights are on, it is an indication that

1—a propeller has feathered automatically.
2—the autofeather system must be reset.
3—an autofeather test switch is on.
4—the autofeather system is armed.

9702. What action must be taken to unfeather the propeller?

1—Pull the feather button out, and hold it.
2—Place the throttle in flight idle.
3—Hold the toggle switch in inc RPM.
4—Momentarily place the feather switch in UNFEATHER position, then release it.

9703. No. 4 engine fails on takeoff and the propeller has autofeathered. If No. 2 engine fails 5 seconds later, what happens to its propeller?

1—It cannot autofeather because its autofeather switch is disarmed.
2—It will autofeather when the No. 4 autofeather light goes out.
3—It will autofeather when the No. 4 feathering button returns to neutral.
4—It cannot be feathered manually until the autofeather switches are reset.

9704. Which is an indication that featherpump action has been terminated?

1—Engine tachometer indicates zero.
2—Governor limit light (amber) illuminates.
3—Reverse pitch light (blue) illuminates.
4—Feather button returns to neutral.

9705. Which method of propeller control would remain after a complete electrical failure?

1—Master lever adjustment of all engine RPM's.
2—Governing action at the last set RPM.
3—Feathering and unfeathering.
4—Feathering, reversing, and governing at the last set RPM.

9706. What condition normally exists in the propeller governor during an overspeed condition?

1—Flyweight force is less than speeder spring force.
2—Governor pump oil pressure is too low.
3—Flyweight force is greater than speeder spring force.
4—Governor pump oil pressure is too high.

9707. In the Hamilton Standard reversible propeller, which blade angle position is not limited by a positive mechanical stop?

1—Full low pitch in governing range.
2—Full feathering pitch.
3—Full high pitch in governing range.
4—Full reverse pitch.

9708. How do the propeller blades react when the piston in the dome is moved forward?

1—Move toward an increased blade pitch.
2—Move toward feather position.
3—Move toward decreased blade pitch.
4—Move toward an unreverse position.

9709. Under which condition is the low-pitch stop retracted?

1—For feather operations.
2—For reverse operations.
3—For pitch lock.
4—For NTS operations.

9710. Which action should be accomplished prior to discharging fire-extinguishing agent into an engine nacelle area?

1—All flight crewmembers should put on full-face type oxygen masks.
2—The emergency fluid shutoff valves should be closed.
3—The electrical system for the engine should be shutoff by means of the generator switch.
4—The fuel system should be changed from a cross-feed configuration to a straight tank-to-engine configuration.

9711. Which action should be taken after engine rotation is stopped during an engine shutdown in flight?

1—Cowl flaps – trail.
2—Fire-extinguisher selector – full in.
3—Cross-feed selectors – on.
4—Prop toggle switch – full decrease RPM.

9712. Which procedure may result in splitting a fire-extinguishing system charge?

1—Returning the CO_2 bottle control to off before the charge is completely dissipated.
2—Selection of several CO_2 bottles for discharge at the same time.
3—Selection of more than one fire areas when the CO_2 bottle is discharged.
4—Discharging CO_2 to an engine before the firewall shutoff valves (fluid shutoff valves) have been closed.

9713. Which is the proper procedure when combating an engine fire in a reciprocating engine transport airplane?

1—The cowl flaps and oil cooler flap should be closed prior to discharging the extinguisher.
2—The fire extinguisher should be discharged for Zones I and II fires but not for Zone III fires.
3—The fire extinguisher should be discharged after the propeller is feathered.
4—The fuel selector valve should be closed prior to the discharge of a fire-extinguishing agent.

9714. Which action should be taken in the event of a Zone I engine fire?

1—Feather only since there is no CO_2 protection for Zone I.
2—Feather and discharge CO_2 into Zones II and III to prevent spread of the fire.
3—Continue normal operation since Zone I fires will eventually blow out.
4—Feather and close the cowl flaps completely to assist in smothering the fire.

9715. Which of the following should be accomplished as a cleanup action after an engine fire has been successfully extinguished in the air?

A. Cross-feed valve – on
B. Propeller toggle switch – dec. RPM
C. Crew oxygen – 100 percent
D. Oil cooler – automatic
E. Carburetor air – cold

1—A, C, D, and E.
2—C and D.
3—A, B, and C.
4—B and E.

9716. Which procedure is normally recommended before unfeathering an engine?

1—Turn off the propeller reverse control circuit breaker.
2—Position the propeller governor to the increase RPM position.
3—Rotate the engine several revolutions with the starter.
4—Turn the fuel booster pump on to low and then immediately to high.

9717. Which is the correct position for a powerplant control immediately prior to unfeathering?

1—Throttle at cruising BMEP position.
2—Propeller toggle switch to increase RPM position.
3—Mixture in autolean position.
4—Magneto switch in the OFF position.

9718. What would be an early indication of oil congealed in the cooler cores?

1—High oil temperature and low oil pressure.
2—High oil temperature and high oil pressure.
3—Low oil temperature and low oil pressure.
4—Low oil temperature and high oil pressure.

9719. What is the most likely cause of trouble if a 28V d.c. resistance-type carburetor air temperature gauge indicates off-scale high while other instruments indicate normal operation?

1—A high resistance in the lead to the temperature bulb.
2—A short circuit at the firewall electrical plug.
3—The engine instrument bus circuit breaker has popped.
4—A ground in the temperature bulb resistance element.

9720. What would be the probable cause and action required if, during cruise, an engine began surging with fluctuating fuel pressure and flow?

1—A vapor lock and the fuel booster pump should be placed in LOW position.
2—High fuel pressure and the fuel booster pump should be placed from HIGH to LOW position.
3—High fuel pressure and the fuel booster pump should be turned off.
4—Carburetor ice; place mixture control in autolean and move carburetor air control to full preheat position for 5 minutes.

9721. What action should the flightcrew take if exhaustion of the water supply is evident during a wet takeoff?

1—Feather the propeller.
2—Move the mixture control to autorich and turn off the ADI switch.
3—Reduce BMEP and turn off the ADI switch.
4—Move the mixture control to autorich, then reduce MAP and RPM.

9722. In the event that the power output of an engine decreases during cruising flight and induction system icing is suspected, what should be the immediate corrective action?

1—Full rich mixture and full carburetor heat.
2—Isopropyl alcohol, full carburetor heat, and alternate fuel source.
3—Autolean mixture, deicing alcohol, and full carburetor heat.
4—Sufficient carburetor heat to raise the CAT to no more than +5° C.

9723. Which powerplant components are most likely to be damaged if reverse pitch is used too long during the landing roll?

1—Rear spark plugs.
2—Nose section thrust bearing.
3—Cowl flap trailing edges.
4—Ignition wiring.

9724. Which action should ordinarily be accomplished first if an engine fails due to fuel mismanagement during cruising flight?

1—Switch booster pumps to high position.
2—Turn on all cross-feed fuel valves.
3—Switch fuel selector to the most nearly full tank.
4—Retard the throttle.

9725. During the power check the engine instruments indicate normal MAP and fuel flow, but low RPM and BMEP. What is a possible trouble?

1—The propeller is set at a blade angle other than full-low pitch.
2—Several dead cylinders.
3—A rich carburetor.
4—A leaking primer.

9726. Which of the following are indications that an engine has stopped firing during normal taxi operation?

A. Oil pressure warning light on
B. Manifold pressure increase
C. Fuel pressure reduced to zero
D. BMEP increase
E. Cylinder head temperature rapid decrease
F. Generator dropping off bus

1—A, B, and F.
2—A, C, E, and F.
3—B, D, and E.
4—A, B, C, D, E, and F.

9727. During the power check the engine instruments indicate normal MAP, low RPM and BMEP, and high fuel flow. What is the possible trouble?

1—A rich carburetor.
2—A defective manifold pressure gauge.
3—The propeller is set at a blade angle other than full-low pitch.
4—Several dead cylinders.

9728. During the power check the engine instruments indicate normal MAP, RPM, and fuel flow, but low BMEP, what is a possible trouble?

1—A defective torquemeter system.
2—Several dead cylinders.
3—A leaking primer.
4—A lean carburetor.

9729. What immediate action is recommended if a fire occurs in the induction system during an engine start?

1—Pull out the affected engine's CO_2 discharge handle.
2—Keep the engine turning to draw the fire through the engine.
3—Depress the propeller feathering button for the affected engine.
4—Close the throttle and pull the fire-extinguisher selector valve handle for the affected engine.

9730. What is the probable trouble when higher than normal amperage is drawn by the starter circuit during an engine start?

1—Engine resistance to turning is higher than normal.
2—The starter is turning but has not engaged to the engine.
3—The starter motor is turning faster than normal but the starter clutch is slipping.
4—There is an open in the starter motor field circuit.

9731. During starting procedures on a twin-row radial engine, there is an indication of a hydraulic lock. How should the lock be cleared?

1—Turn the propeller backward by hand.
2—Disconnect the hydraulic pump inlet line and prime the pump.
3—Use the booster pump in the high-boost position.
4—Remove spark plugs from the lower cylinders.

9732. If the engine does not start after a reasonable amount of cranking and there is no fuel draining from the drip valves, what action should be taken?

1—Pump the throttle and move the mixture control to autorich.
2—Stop cranking because the starter motor has inadequate cooling for continuous operation.
3—Stop cranking and clear the hydraulic lock.
4—Put the booster pump switch in high position and use the primer.

9733. If the idle mixture is excessively lean, what will be the indication if the primer is activated while the engine is idling?

1—The RPM will increase and the MAP will increase.
2—The RPM will increase and the MAP will decrease.
3—The RPM will decrease and the MAP will increase.
4—The RPM will decrease and the MAP will decrease.

9734. If the idle mixture is excessively rich, what will be the indication if the primer is activated while the engine is idling?

1—The RPM will decrease and the MAP will decrease.
2—The RPM will decrease and the MAP will increase.
3—The RPM will increase and the MAP will increase.
4—The RPM will increase and the MAP will decrease.

9735. When carburetor heat is applied while operating in high blower, which precaution should be followed?

1—Nacelle flaps should be put in trail to maintain a low CHT.
2—CAT should be limited to prevent detonation.
3—Carburetor deicing alcohol should be turned on to prevent overheating the carburetor.
4—MAP should be decreased to maintain constant power.

9736. The cabin compressors are located on the outboard engines. During cruising flight, in order to obtain the same combustion pressures in each engine, how should Nos. 1 and 4 engine BMEP's be adjusted?

1—The same as Nos. 2 and 3 engines by varying the manifold pressures.
2—Approximately 5 BMEP's higher than Nos. 2 and 3 engine BMEP's.
3—Approximately 5 BMEP's lower than Nos. 2 and 3 engine BMEP's.
4—The same as Nos. 2 and 3 engines by varying the RPM's.

9737. At what time during descent should the engine superchargers be shifted from high to low?

1—At the lowest altitude descent power can be obtained in high blower.
2—At the highest altitude descent power can be obtained in low blower.
3—Before starting the descent.
4—At high blower critical altitude.

9738. Which procedure can be used to avoid excessive master rod bearing loads during descent?

1—Adjust throttles to maintain a manifold pressure (inches/Hg.) of not more than RPM/100.
2—Delay shifting to autorich mixture until the aircraft arrives at final approach altitude.
3—Delay shifting to low blower until the aircraft arrives at initial approach altitude.
4—Adjust throttles to maintain at least 1" Hg. MAP for each 100 RPM.

9739. Which action should be accomplished immediately after landing?

1—Change cowl flaps to wide-open position.
2—Change cowl flaps to takeoff position.
3—Toggle the propellers to INC RPM position.
4—Toggle the propellers to DEC RPM position.

9740. Which action is advisable for the normal shutdown of an engine after flight?

1—Stop the engine only after CHT is below 200° C.
2—Close cowl flaps after rotation stops.
3—If the engine backfires during the stopping attempt, place ignition switch back on.
4—If the engine continues to run with mixture in ICO, place the ignition switch off.

9741. While cruising in a manual lean power setting, the pilot requests a change to a lower power setting with autolean mixture. What is the correct sequence of actions?

1—Decrease RPM, decrease MAP, close cowls as necessary.
2—Decrease BMEP, decrease RPM, lean the mixture.
3—Close cowl flaps, change mixture to autolean, decrease RPM, increase BMEP.
4—Enrichen mixture, decrease MAP, decrease RPM, close cowls as necessary.

9742. What are normal indications when shifting from low blower to high blower at constant throttle setting?

1—A decrease in BMEP and an increase in MAP.
2—An increase in BMEP and an increase in MAP.
3—An increase in BMEP and a decrease in MAP.
4—A decrease in BMEP and a decrease in MAP.

9743. Which is an appropriate procedure if the dew point is high at takeoff?

1—Adjust MAP upward to obtain rated takeoff power.
2—Use a slightly lean mixture to obtain maximum takeoff BMEP.
3—Reduce takeoff BMEP setting to prevent overstressing combustion chambers.
4—Use partial carburetor heat to prevent induction air screen ice.

9744. Maximum allowable takeoff BMEP and RPM are set at the start of the takeoff run. As the aircraft accelerates, the BMEP increases without further movement of the throttle. What causes this BMEP change?

1—Increasing ram effect.
2—Operation in ground effect.
3—Improvement of propeller efficiency.
4—Propeller governor surging.

9745. Why should high supercharger ratio not be used during takeoff from relatively low altitude airports?

1—Detonation will occur at all power settings above maximum cruise power.
2—Engine overspeeding will result if takeoff MAP is obtained.
3—Excessive MAP will be needed to obtain takeoff BMEP.
4—Excessive BMEP will be developed at takeoff RPM and MAP.

9746. What should the flight engineer do just prior to the application of takeoff power or during the first part of the takeoff roll?

1—Assure that the nacelle flaps are wide open.
2—Turn on the carburetor alcohol system.
3—Adjust the carburetor heat controls to obtain +15° C OAT.
4—Run the cowl flaps toward closed.

9747. Which is a correct control or switch setting for normal taxiing operation of a reciprocating engine transport airplane?

1—Spark control – advance.
2—RPM master lever control – calibrate.
3—Autofeather switch – test.
4—Cowl flaps – takeoff.

9748. When the OAT is conducive to carburetor icing, which procedure is recommended?

1—Position carburetor heat controls to maintain 59° F carburetor heat during takeoff and climb.
2—Use carburetor heat during warmup, but remove heat and allow time for the automatic mixture control to stabilize prior to takeoff.
3—Maintain carburetor heat near 100° F until takeoff power is initiated, then carburetor heat off.
4—Position carburetor heat controls to maintain carburetor heat near 35° F during ground operation, takeoff, and climb until out of icing conditions.

9749. What is the proper position for mixture and carburetor air controls for an engine start on a cold day, prior to activating the engine starter?

1—Mixture controls – idle cutoff; carburetor air controls – hot.
2—Mixture controls – idle cutoff; carburetor air controls – cold.
3—Mixture controls – autorich; carburetor air controls – cold.
4—Mixture controls – autorich; carburetor air controls – hot.

9750. Which condition should the crew check prior to starting the engines?

1—All manifold pressure gauges are reading zero.
2—At least one inverter is on.
3—The auxiliary power unit has been removed from the aircraft.
4—The control locks are engaged.

9751. Before starting the engines, which instrument readings should be noted for use during the engine ground run-up check procedures?

1—BMEP differences.
2—Oil inlet temperatures.
3—Static manifold pressures.
4—Differences between carburetor air temperature indications and reported OAT.

9752. Why should the engines be operated at 1,000 RPM during ground operation rather than the minimum idle of 600 RPM?

1—Because the hydraulic pumps will not operate properly at 600 RPM.
2—To ensure that the generators, rather than the battery, are supplying current to the electrical system.
3—To prevent the engines from backfiring.
4—To prevent hydraulicking in the lower cylinders.

9753. How should the primer be operated when starting an engine equipped with a pressure carburetor?

1— Held on until the engine starts with the mixture control in idle cutoff position.
2—Used to an extent determined by the OAT while cranking and turned off when the engine starts.
3—Held on after the engine starts until the mixture control is moved out of the idle cutoff position.
4—Used to an extent determined by the OAT after the engine has started.

9754. When is the booster ignition system to be used?

1—During periods of heavy rain.
2—Starting, takeoff, approach, and landing.
3—Starting and takeoff only.
4—Starting only.

9755. Which spark plugs are firing when the ignition switch is moved from both to left position?

1—Front plugs of both banks.
2—Rear plugs of both banks.
3—Both plugs of the front bank.
4—Both plugs of the rear bank.

9756. What is an indication of proper starter operations?

1—Normal indication on the aircraft ammeters.
2—Normal indication on the voltmeter.
3—Normal indication on the prop deicing ammeter.
4—Normal indication on the pitot and scoop ammeter.

9757. Which action is required to actuate the starter?

1—Depress the starter button and hold the booster switch on.
2—Select the engine, then hold the starter and safety switches on.
3—Rotate the selector, place the safety switch on, then depress the starter button.
4—Hold the starter switch on for the selected engine.

9758. What is the probable trouble if there is a 7 BMEP drop when the ignition switch is moved from both to left and there is no change of BMEP when the switch is moved from both to right?

1—Right magneto ignition switch wire is grounded.
2—Left magneto ignition switch wire is open.
3—Left magneto ignition switch wire is grounded.
4—Right magneto ignition switch wire is open.

9759. What is indicated when the lubrication system amber light is on?

1—Engine pump pressure is zero.
2—There is no oil in the oil tank, except that which is available for feathering.
3—Oil system pressure is 45 PSI or less.
4—Temperature of oil leaving the cooler is above 150° C.

9760. Which function is performed by the lubrication system scavenge pump?

1—Pump oil from the engine, through the cooler, to the tank.
2—Provide an oil supply to the propeller feathering system.
3—Draw oil from the bottom of the tank to prevent engine-driven pump cavitation.
4—Pump oil from the sump, through the hopper, to the oil cooler.

9761. What provision is provided to prevent windmilling in the event of an engine oil supply loss through a leaking oil cooler?

1—Pulling the fire selector handle will automatically feather the propeller.
2—The oil tank will still contain an oil reserve for propeller feathering.
3—A separate auxiliary oil tank provides oil for propeller feathering and reversing.
4—Engine rotation can be stopped only by a deliberate seizure procedure.

9762. When the water/alcohol mixture is injected into the engine during takeoff, what factor causes the power to increase?

1—The mixture is enriched.
2—The air density decreases.
3—The mixture is leaned.
4—The air density increases.

9763. What is an indication of proper operation when the water injection switch is turned off?

1—An increase of water pressure.
2—A reduction of manifold pressure.
3—An increase of fuel flow.
4—Illumination of the water pressure warning light.

9764. What is the function of the automatic mixture control in the carburetor?

1—Increases fuel flow with decreases of air density.
2—Automatically corrects the fuel/air mixture as throttle position is changed.
3—Decreases fuel flow as altitude is increased.
4—Enrichens the mixture at takeoff power settings.

9765. Which flow is measured by the fuel flowmeter?

1—Flow from the carburetor to the injection pumps.
2—All fuel flow from the fuel pump to the carburetor.
3—Flow from the carburetor to the fuel discharge nozzle.
4—Fuel and ADI flow at the fuel discharge nozzle.

9766. What is indicated by the ADI green light being on?

1—ADI mixture is being discharged in the engine.
2—Water/alcohol under pressure is available to the ADI regulator.
3—Fuel/air mixture has been enriched.
4—The ADI fluid supply has been depleted.

9767. Which powerplant control position will be attained in the event of a d.c. electrical system failure?

1—Spark advance – cruise.
2—Engine power – cruise.
3—Propeller governor – full low pitch.
4—Supercharger – low blower.

9768. There has been a failure of the engine instrument inverter. Select from the list below the instruments which would continue to give reliable indications.

A. Autosyn oil pressure
B. Magnesyn fuel pressure
C. Thermocouple CHT
D. Ratiometer CAT
E. Autosyn MAP
F. Magnesyn BMEP
G. Tachometers
H. Ratiometer oil temperature

1—C, D, G, and H.
2—B, C, F, and H.
3—A, B, E, and F.
4—A, B, D, and G.

9769. Where is the CHT measured?

1—Spark plug base.
2—Exhaust pipe.
3—Cylinder cooling fins.
4—Carburetor air scoop.

9770. Which variable is used, together with BMEP, to calculate limiting brake horsepower?

1—Manifold pressure.
2—Carburetor air temperature.
3—Propeller efficiency.
4—Crankshaft RPM.

9771. What is the purpose of the manifold pressure gauge purge valves?

1—To clean the pressure gauge lines of condensate and foreign matter.
2—To relieve excess pressure that may damage the gauge.
3—To ensure ambient pressure is available to the gauge.
4—To prevent foreign matter from entering the lines when the engine is not operating.

9772. What is a definition of BMEP?

1—The torque delivered to the propeller reduction gearing at maximum rated RPM.
2—The portion of combustion chamber pressure that produces useful power at the propeller shaft.
3—The total average pressure produced in the combustion chamber.
4—Indicated horsepower less friction horsepower.

9773. What is the effect on cylinder head temperature when the engine is operating in a cruise mixture setting 12 BMEP below the best power mixture setting?

1—CHT's are relatively hot because the mixture burns too rapidly.
2—CHT's are relatively hot because the mixture burns too slowly.
3—CHT's are relative cool because of excess fuel in the mixture.
4—CHT's are relatively cool because of excess air in the mixture.

9774. How are the cylinders identified on the R-2800 engine?

1—No. 1 cylinder is at the top front row.
2—No. 10 cylinder is at the bottom front row.
3—Master rods are located in cylinders Nos. 1 and 9.
4—Cylinders Nos. 1 through 9 are located in the rear row.

9775. Which statement is true regarding the flight compartment voice recording system?

1—Voice recording is interrupted during the test sequence of the recorder.
2—Voice recording is not interrupted during the test sequence of the recorder.
3—The tape can be erased anytime the nose gear shock strut is extended.
4—The last 1/2 hour of recording can be erased when the gear is retracted.

9776. Which factor has the effect of decreasing takeoff BMEP when rated takeoff MAP and RPM are applied?

1—Use of low blower.
2—Use of water injection.
3—Dry air.
4—High humidity.

9777. How will engine performance be affected if constant RPM and constant MAP are maintained in a climb from sea level to critical altitude?

1—Brake horsepower will gradually decrease.
2—Brake horsepower will gradually increase.
3—Throttle position remains fixed.
4—Throttle position will be gradually closed.

9778. Which action should be taken after turning the master switch off in event of airfoil heater backfiring?

1—Do not attempt to operate the system during flight.
2—Place the master switch back on after temperature drops below the red line on the gauge.
3—Select the alternate fuel and ignition, then place the master switch on.
4—Replace the heater fuses, then place the master switch on.

9779. Which action should be taken if the tail anti-icing temperature gauge indicates normal operating temperature, but the associated fuel pressure gauge indicates zero?

1—Place the airfoil heater master switch off.
2—Continue anti-icing operation; monitor temperature.
3—Place the alternate fuel and ignition switch on.
4—Place the cabin heater master switch off.

9780. What action can be taken to operate the airfoil anti-icing system manually if the temperature remains above limits during automatic operation?

1—Turn the heater master switch on and off as required.
2—Manually turn the fuel and ignition switch on and off as required.
3—Select cabin supercharger air and place the heater switches off.
4—Move the airfoil anti-icing temperature selector to a cooler position.

9781. How should the carburetor alcohol system be used?

1—When there is an unexplained decrease of manifold pressure.
2—Before entering known icing conditions.
3—When carburetor heat is unable to remove or prevent ice formation.
4—Only if the application of carburetor heat causes an excessive BMEP drop.

9782. What is an indication of proper operation of the airfoil A/I system during flight?

1—Heater temperature 210° – 260° C.
2—Fuel pressure 20 – 26 PSI.
3—Amber backfire light on.
4—Airfoil heater master switch positioned on and green light illuminated.

9783. Which is a requirement for operation of the airfoil A/I system on the ground?

1—Engines Nos. 2 and 4 operating.
2—Ground blower switch on.
3—Engine No. 2 or 3 operating or an external source of ventilation air.
4—Heater fuel and ignition switch in No. 2 position.

9784. Which is the normal fuel source for the airfoil heaters?

1—All heaters from No. 3 main.
2—Left wing heater No. 2 main; right wing and tail heater No. 3 main.
3—All heaters from No. 2 main.
4—Right wing heater No. 3 main; left wing and tail heater No. 2 main.

9785. How should the airfoil A/I system normally be used?

1—During freezing precipitation but not takeoff and landing.

2—On for a sufficient time to crack off accumulated ice, then off until ice forms again.
3—Continuously when outside air temperature is +5° C or less.
4—On at least 5 minutes before entering a known icing condition.

9786. Which control actuates the radome anti-icing system?

1—Pitot heater switch.
2—Windshield heat selector switch.
3—Radome deicing switch.
4—Airfoil anti-icing heater switch.

9787. Which action should be taken to obtain maximum heat at the windshield?

1—Place all cabin cold air outlets in OPEN position.
2—Place the flight compartment heat control in full hot.
3—Place the windshield heat switch in HIGH position.
4—Place the windshield heat selector in anti-icing.

9788. What is used for anti-icing of the two forward windshields?

1—Isopropyl alcohol spray.
2—Electric windshield wipers.
3—Hot air from the cabin heater or superchargers.
4—Electrostatic thermopane.

9789. Which is an indication of the pitot heat being turned on?

1—An increase on the outside air temperature indicator.
2—A 6 – 9 amperage draw indication for each pitot/static heater.
3—The pitot heat indicator light going on.
4—A 6 – 9 volt momentary drop.

9790. Which units, in addition to pitot and static pressure ports, are heated when the pitot heat switch is turned on?

1—Scoop leading edges and splitters.
2—Radio antenna masts.
3—Fluid drains and flight deck windows.
4—Autopilot static air vent.

9791. What is a feature of the alcohol deicing system?

1—Each engine has its own system and supply tank.
2—Continuous operation is required in atmospheric conditions where visible moisture is present.
3—Alcohol is utilized to protect the carburetor air filter screen.
4—Alcohol is provided to each carburetor by a single electric motor-driven pump.

9792. Which method is used to control ice on the wing and empennage surfaces?

1—Inflated boot-type deicing system.
2—Electrically heated rubber leading edge strips.
3—Combustion heater thermal anti-icing system.
4—Engine bleed air type anti-icing system.

9793. Which action should be taken if a main gear down latch fails to engage?

1—Use full nitrogen bottle pressure for emergency gear extension.
2—Place the gear lever above neutral, then return to down.
3—Use emergency pump with selector in accumulator.
4—Place the gear lever in the EMERGENCY position.

9794. What happens if the landing gear is lowered by emergency action?

1—Pressure is routed to the down side of the actuator overpowering the bungee uplock.
2—The emergency d.c. hydraulic pump supplies pressure to release the landing gear uplocks.
3—The rivets in the landing gear locks are sheared.
4—The landing gear uplocks are released.

9795. Which selection is desired to minimize fluid or pressure loss during a hydraulic system failure?

1—Flap lever – 5°.
2—Landing gear lever – up.
3—Hydraulic bypass – down.
4—Emergency hydraulic pump selector valve lever – pressure accumulator.

9796. Which is an indication of the failure of one hydraulic pump?

1—Pump low-pressure light on.
2—System pressure gauge indication low.
3—Reservoir fluid level low.
4—Reduced rate of pressure buildup during operation.

9797. What is the purpose of placing the hydraulic system in the bypass (OFF) position?

1—To reduce system wear when operation of hydraulic units is not desired.
2—To reduce system pressure in event of return line leakage.
3—To bypass the engine-driven pumps in event of pump case leakage.
4—To assure adequate fluid and pressure to the flap actuators when fluid level is low.

9798. What deactivates the nosewheel steering after landing gear retraction?

1—Orifice check valves in the steering cylinders.
2—Landing gear selector (control) valve and strut-centering cam.
3—Mechanical lock in the steering wheel.
4—Mechanical lock on the steering control cables.

9799. What is indicated by the brake pressure gauge?

1—Brake accumulator air pressure.
2—Pressure supplied to the brakes.
3—Brake accumulator hydraulic pressure.
4—Pressure at the brake lockout debooster cylinder.

9800. Which is a feature of the airbrake system?

1—Differential braking is available for taxiing.
2—The control valve handle is safetied in the HOLD position.
3—Holding the handle in the ON position provides maximum braking efficiency at all three landing gears.
4—Air released from the brakes is exhausted overboard.

9801. What is the purpose of the lockout cylinder associated with the landing gear?

1—Prevents mixing of hydraulic fluid and nitrogen in the event the emergency brakes are used.
2—Allows the landing gear doors to open or close in the proper sequence.
3—Ensures that the landing gear will lock in the down position when it has been lowered by a free-fall.
4—Prevents the loss of hydraulic system pressure in the event of a brake line failure.

9802. Which condition is required to obtain hydraulic pressure at the brakes?

1—Shock struts compressed.
2—Landing gear lever down.
3—Selector lever in BRAKES position.
4—Hydraulic pressure from either engine-driven pump.

9803. Which system or component is affected by the main gear squat switch during takeoff?

1—Water injection.
2—Landing gear warning lights.
3—Automatic feathering.
4—Landing gear control lever safety latch.

9804. Which system can only receive power from the auxiliary hydraulic pump?

1—Main cabin cargo doors.
2—Windshield wipers.
3—Parking brakes.
4—Belly compartment cargo doors.

9805. What is the source of air pressure for the hydraulic reservoir?

1—Engine-driven air pumps.
2—Venturi tee.
3—Engine No. 2 or 3 bleed air system.
4—Nitrogen preload.

9806. Which control directs hydraulic pump pressure directly back to the reservoir?

1—Fire extinguisher selector.
2—Auxiliary pump selector valve control lever.
3—Hand shutoff valve.
4—System bypass lever.

9807. What type hydraulic pumps are installed on the airplane?

1—Three a.c. motor-driven pumps.
2—Two engine-driven pumps and one a.c. motor-driven pump.
3—Two engine-driven pumps and one d.c. motor-driven pump.
4—Three engine-driven pumps.

9808. What is indicated on the system pressure gauge?

1—Main accumulator air pressure.
2—Pressure available to the windshield wipers.
3—Pressure available at the reservoir.
4—Nosewheel steering accumulator air pressure.

9809. Which action should be accomplished prior to dumping fuel?

1—Switch fuel booster pumps to high boost position.
2—Place the fuel selector valves to main tanks on.
3—Position all cross-feed valves – on.
4—Turn all electrical switches – off.

9810. What action should be taken if fuel pressure drops to zero and the warning light comes on but the engine continues to run smoothly?

1—Place the booster pump switch in high.
2—Shut down the engine.
3—Operate the engine at reduced throttle.
4—Select a fuel tank which has adequate fuel.

9811. What is the first step if an engine fails in flight due to zero fuel pressure?

1—Place the boost pump switch in high.
2—Switch to an alternate fuel tank.
3—Retard the throttle.
4—Feather the propeller.

9812. Which fuel-dumping procedure is recommended?

1—Gear and flaps up, dump control handle to open; after dumping, control handle to close.
2—Flaps down, dump control handle to drain; after dumping, control handle to close.
3—Gear and flaps down, dump control handle to open; after dumping, control handle to drain, then to close.
4—Gear and flaps up, dump control handle to open; after dumping, control handle to drain, then to close.

9813. Which problem is indicated by rapid fluctuation of fuel pressure, fuel flow, and engine power during cruising flight?

1—Vapor lock.
2—Carburetor ice.
3—Hydraulic lock.
4—Fuel ice.

9814. What is indicated when the fuel pressure warning light is on?

1—Pressure at the booster pump is less than 22 PSI.
2—Pressure at the booster pump is less than 18.5 PSI.
3—Pressure at the carburetor is less than 22 PSI.
4—Pressure at the carburetor is less than 18.5 PSI.

9815. What units of measurement are indicated by the fuel system gauges?

1—Fuel quantity – lb.; fuel flow – lb. per hour per engine.
2—Fuel quantity – gal.; fuel flow – total lb. per hour.
3—Fuel quantity – usable lb.; fuel flow – lb. per minute per engine.
4—Fuel quantity – usable gal.; fuel flow – total gal. per minute.

9816. What is the recommended procedure for using the electric fuel booster pumps?

1—Low – when selecting a new fuel supply.
2—High – for engine starts.
3—Low – for all climbs below 10,000 ft.
4—High – for all takeoffs and initial climb.

9817. Which is a general rule for in-flight fuel tank management?

1—Always empty the main tanks first in cruise.
2—Do not transfer fuel from tank to tank.
3—Do not use main tanks for landing.
4—Always empty the outboard tanks first in cruise.

9818. What is the function of the standpipes in the fuel tanks?

1—Prevent drawing water or sediment into the fuel pumps.
2—Retain a reserve of 45 minutes fuel in each main and alternate tank.
3—Provide a separate fuel supply for the combustion heaters.
4—Retain a reserve of fuel in main tanks after dumping.

9819. Which pressure is shown on the fuel pressure gauge?

1—Pressure in the cross-feed manifold.
2—Output of boost pumps or engine-driven pump.
3—Output of boost pumps or gravity feed pressure.
4—Volume of fuel flow from carburetor to engine.

9820. What is the purpose of the check valves in the fuel system supply pipes?

1—Prevent fuel transfer from tank to tank.
2—Prevent fuel venting from carburetor to tank.
3—Permit suction feed of fuel in event of boost pump failure.
4—Permit fuel venting overboard in event of thermal expansion of fuel in the fuel supply pipes.

9821. Which is a characteristic of the maximum permissible indicated airspeed?

1—Remains constant at all pressure altitudes.
2—Decreases with altitude above 16,000 ft.
3—Increases with altitude above 16,000 ft.
4—Increases with altitude up to 16,000 ft. and remains constant above 16,000 ft.

9822. You check the static ports for being open and clean. In addition to the flight instruments, with which systems are these ports associated?

1—Autopilot, cabin pressure controller, and cabin differential pressure gauge.
2—Cabin pressure controller, flight recorder, and cabin altimeter.
3—Cabin pressure controller, autopilot, and cabin altimeter.
4—Autopilot, flight recorder, and cabin differential pressure gauge.

9823. Which item requires an input of normal static pressure only?

1—Airspeed warning switch.
2—Cabin differential pressure switch.
3—Vertical velocity indicator.
4—Flight recorder.

9824. What will be the warning indication if the flaps are in the UP position when the throttles are advanced for takeoff?

1—A steady horn.
2—A light in the flap handle and a steady horn.
3—A steady bell.
4—An intermittent horn.

9825. Which mechanism is used to prevent flap asymmetry?

1—Hydraulic actuator brake.
2—Flap motor electric brake.
3—Followup system.
4—Cable bus system.

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9826. What actions should be taken to lower the flaps using the emergency system?

1—Flap lever – down; hydraulic bypass – on; emergency hydraulic pump selector – system; emergency hydraulic pump – on.
2—Hydraulic bypass – off; emergency pump selector – accumulator; flap lever – down; emergency hydraulic pump – on.
3—Emergency pump selector – flaps; flap lever – down; emergency hydraulic pump – on.
4—Hydraulic bypass – on; flap lever – down; emergency hydraulic pump – on.

9827. What are the power sources to operate the flaps?

1—Normal – two engine-driven hydraulic pumps; emergency – mechanical handcrank.
2—Normal – four electric-driven hydraulic pumps; emergency – electric motor drive.
3—Normal – two engine-driven hydraulic pumps; emergency – electric-driven hydraulic pump.
4—Normal – No. 2 or 3 hydraulic pump; emergency – No. 1 or 4 hydraulic pump.

9828. Which trim indicator will be deflected on a ground check when the primary flight controls are actuated in the cockpit?

1—Aileron trim indicator.
2—Rudder trim indicator.
3—Elevator trim indicator.
4—Autopilot three-axis indicator.

9829. Which flight control tabs are operated only by the trim tab controls?

1—Rudder only.
2—Elevators only.
3—Ailerons and elevators only.
4—Ailerons, elevators, and rudder.

9830. Which control surface trim tabs can be actuated by both the autopilot and the respective trim control wheel?

1—Ailerons and elevators.
2—Rudder only.
3—Elevators only.
4—Rudder and ailerons.

9831. What protection is provided when the control surface lock is engaged?

1—All flight controls, trim tabs, and throttles are locked.
2—Control surfaces are held in neutral, and two throttles are restricted.
3—Control surfaces are locked in neutral, and all throttles are restricted.
4—All flight controls and trim tabs are locked, two throttles cannot be advanced beyond approximately the 1,500 RPM position.

9832. Which method is used to assist movement of the flight control surfaces?

1—Hydraulic boosters.
2—Balance panels.
3—Autopilot servos.
4—Spring control tabs.

9833. Smoke is detected in the electrical equipment; you turn off the battery and generator switches and trip all circuit breakers. Which components should be turned on to isolate the faulty circuit?

1—The inverters and each circuit breaker one at a time.
2—The battery switch, each generator, and each circuit breaker one at a time.
3—The battery switch and each circuit breaker one at a time.
4—All generators but with the field circuit breakers off.

9834. During cruising flight, all four generators are producing 28.5V and 220 amps. One generator is then shut off. How much electrical load must be eliminated to prevent the remaining generators exceeding their rated limit of 250 amps?

1—3.71 KW.
2—9.69 KW.
3—14.25 KW.
4—1.99 KW.

9835. What is a probable source of trouble if a generator is producing zero amperage and residual voltage?

1—Faulty ammeter.
2—Reverse current relay main contactor points are stuck open.
3—Main feeder line is disconnected at the bus bar.
4—Generator field circuit breaker is open.

9836. One d.c. generator is producing normal volts and zero amps while the other generators are producing normal volts and 150 amps. What is a possible trouble with the malfunctioning generator system?

1—Generator field circuit breaker has popped.
2—Defective voltage regulator.
3—Generator under-voltage or over-voltage protective system has actuated.
4—Reverse current relay is open.

9837. No. 3 generator is producing normal volts and zero amps while all other generators are producing normal volts and amps. When No. 3 generator switch is turned off, the amperage output of the other generators increases. What is a probable trouble with No. 3 generator system?

1—Disconnected field circuit.
2—Reverse current relay is open.
3—Disconnect equalizing circuit.
4—Blown fuse in the ammeter circuit.

9838. A generator is switched off after the overheat warning light comes on, but the light does not go out after a period allowed for cooling. The engine is then shut down and the light goes out. What trouble is indicated by these symptoms?

1—A failure in the warning system.
2—A generator overload (amperage output).
3—A mechanical malfunctioning of the generator.
4—The field circuit breaker has tripped.

9839. What would be the indication of inoperative inverters when throttles are advanced for takeoff?

1—Intermittent warning horn.
2—Steady warning horn.
3—Flashing amber light on the captain's instrument panel.
4—Steady amber light on the captain's panel and a red light on the flight engineer's panel.

9840. When generators are operating in parallel, what is the maximum allowable difference between their outputs?

1—30 amps.
2—0.5V.
3—30 watts.
4—Plus or minus 50 RPM.

9841. When should the generator switches be placed ON during the starting procedure?

1—Before starting the engines.
2—After each engine is started.
3—After all engines are started.
4—When the generator output reaches 27.5V.

9842. During the engine run-up check at 1,500 – 1,700 RPM, generator operation is checked. At this RPM, the electrical instruments should show which operating condition of the generators?

1—Off the bus and producing 28.5V.
2—Off the bus and producing less than 26V.
3—On the bus and producing approximately rated amperage.
4—On the bus and producing approximately equal amperage.

9843. What is a normal setting for inverter switches during takeoff?

1—Captain's instrument UPPER; engine instrument EMERGENCY; copilot's instrument LOWER.
2—Captain's instrument, copilot's instrument, and engine instrument UPPER.
3—Captain's instrument UPPER; copilot's instrument LOWER; engine instrument STANDBY.
4—Captain's instrument UPPER; engine instrument and copilot's instrument LOWER.

9844. Which components cannot be powered from the emergency inverter?

1—Engine instruments.
2—Gyro compass.
3—First officer's flight instruments.
4—Captain's flight instrument.

9845. When checking the electrical system, what would be a satisfactory indication of engine instrument power?

1—110V a.c.
2—115V a.c.
3—26V a.c.
4—30V a.c.

9846. Which of the electrical protective devices can be manually reset and held on after having been actuated by an excessive current flow?

1—Slow acting fuses.
2—Voltage regulator.
3—Limit switches.
4—Nontrip free circuit breakers.

9847. What is indicated if the inverter compartment warning light is on?

1—Insufficient cooling airflow.
2—Over-voltage.
3—Inverter failure.
4—Electrical system fire.

9848. What is the power source for the secondary bus?

1—The generator which has been selected for essential power.
2—The emergency inverter.
3—The battery or the paralleling bus.
4—The main bus through a current limiter.

9849. Which actions are normally completed when the generator switch is placed in the ON position?

1—The field relay and the bus tie breaker are closed.
2—The reverse current relay is closed, and the voltage regulator is connected to the paralleling bus.
3—The field circuit breaker and the reverse current relay are closed.
4—The voltage regulator main contactor is closed and the field circuit breaker is closed.

9850. What is the purpose of the emergency inverter governor?

1—Provide for rapid acceleration during starting.
2—Maintain a constant frequency.
3—Maintain a constant voltage.
4—Regulate the current output.

9851. What is a function of the reverse current relay?

1—Prevents current flow from the generator to the bus.
2—Prevents current flow from the bus to the battery.
3—Prevents an operating generator from feeding current to an inoperative generator.
4—Prevents one generator from feeding excess current into a faulty circuit.

9852. What is the purpose of the generator paralleling system?

1—To obtain equal generator voltages.
2—To obtain equal generator loads.
3—To adjust generator voltage, speed, and phase angle.
4—To connect all buses together when the generators have exactly the same (parallel) voltage output.

9853. How does the voltage regulator control the output of the d.c. generator?

1—By adjusting current flow through the field windings.
2—By increasing or decreasing resistance in the generator armature circuit.
3—By increasing or decreasing the speed of the drive shaft.
4—By opening the current limiter if generator voltage is excessive.

9854. What is the auxiliary source of power for the 28V d.c. electrical system?

1—Two 14-volt batteries in series.
2—Two 12-volt batteries in parallel.
3—Two 12-volt batteries in series.
4—Two 14-volt batteries in parallel.

9855. During a normal starting procedure, when should the ground power be disconnected?

1—When at least two generators are producing normal voltage.
2—After all engines are started.
3—After the ground run-up check.
4—When at least one hydraulic pump, one cabin supercharger, and one generator are operating normally.

9856. What should be the output rating of the external ground power source?

1—28 ± 0.5V d.c.
2—115/120V a.c. rectified to 24V d.c.
3—12 to 14V d.c.
4—26 to 29V d.c., 40 amps.

9857. Which switch positions are required to connect an external power source to the aircraft's electrical system?

1—Battery selector switch ON; generator switches ON.
2—Battery selector switch GND PWR; battery master switch ON.
3—Ground power switch ON; battery switch OFF.
4—Battery master switch GND PWR; ground power switch ON.

9858. Which action can be taken during flight to restore cabin heater operation after the dropout safety switch has actuated?

1—Place the switch in manual position.
2—Cycle the heater ignition switches OFF, then ON.
3—Place the crossfeed switch in NORMAL.
4—Replace the blower fuses after the heater has cooled.

9859. What is the effect of pulling the master emergency depressurization control?

1—Opens the emergency pressure relief valves and nose dump valve; declutches superchargers and closes outflow valve.
2—Opens the outflow valve, all relief valves, and nose dump valve; disconnects the superchargers.
3—Opens the outflow valve and emergency pressure relief valves; declutches the superchargers.
4—Opens the nose dump valve. decreases supercharger output to zero, and closes all other pressurization control valves.

9860. Which action would be appropriate regarding a cabin supercharger which has an abnormally high oil temperature?

1—Feather the propeller, disengage the supercharger clutch, then restart the engine.
2—Disengage the supercharger clutch, let oil cool into green band, then re-engage with engine at idle RPM.
3—Disengage the supercharger and feather the propeller; when oil cools, re-engage supercharger and restart the engine.
4—Disengage the supercharger clutch from the engine and do not re-engage.

9861. Which control positions are required when checking for cabin supercharger duct leakage by comparing duct pressure reading against chart values?

1—Cooling turbine OFF; manual temp. control full COLD.
2—Cooling turbine OFF; manual temp. control full HOT.
3—Cooling turbine NORMAL; manual temp. control full COLD.
4—Cooling turbine NORMAL; manual temp. control full HOT.

9862. What should be done if cabin pressure fluctuation cannot be controlled by the automatic or manual pressure control switches?

1—Disconnect both cabin superchargers.
2—Place the cooling turbine switch in NORMAL.
3—Operate the emergency cabin altitude control crank.
4—Close both emergency cabin air shutoff valves.

9863. What correction is made when the cabin heater backfire switch is activated?

1—Mixing valve port C is closed.
2—Heater fuel and ignition are shut off.
3—Heater airflow is restricted, enriching the mixture.
4—Mixing valve port D is closed.

9864. In the event that cabin supercharger surging occurs while cruising at low altitudes on a hot day, how can the malfunction be corrected?

1—Close the aftercooler flap door and use the cooling turbine exclusively for air conditioning.
2—Cut off the air which is driving the expansion turbine.
3—Increase the back pressure on the duct between the superchargers and the cooling turbine.
4—Place the cooling turbine switch in the NORMAL position.

9865. What action should be taken if a cabin supercharger airflow rate is high and does not drop with a reduction of engine RPM?

1—Feather the propeller.
2—Place the cooling turbine switch OFF.
3—Manually decrease cabin altitude.
4—Open the emergency cabin altitude.

9866. Assume the cabin thermostat is set to 70° F and all air-conditioning controls are set for automatic operation. What action should be taken if the cabin temperature remains at 60° F and it is determined that the electronic temperature regulator is inoperative?

1—Hold the manual temperature control in HOT position until the cabin temperature rises to 70° F.
2—Decrease the cabin pressure altitude to obtain a greater degree of cabin supercharger heat of compression.
3—Increase the thermostat setting to 80° F.
4—Hold the manual temperature control in HOT position for about 10 seconds and wait 10 seconds to determine results.

9867. If the cabin differential pressure is increasing slower than desired, what control should be adjusted?

1—The cabin altitude selector to cause the cabin compressor to decrease speed.
2—The cabin rate selector knob to cause the outflow valve to close faster.
3—The cabin climb control to cause the relief valves to open faster.
4—The cabin differential control to cause the cabin compressor to increase speed.

9868. In the event that cabin differential pressure is too high, a correction can be made by

1—increasing cooling turbine speed.
2—closing the outflow valve.
3—decreasing cabin supercharger (compressor) RPM.
4—increasing cabin altitude.

9869. If the outflow valve is adjusted to close too fast during climb, the cabin rate of climb will be

1—slower than desired.
2—faster than desired.
3—zero to 5,000 ft., then the same as aircraft rate of climb.
4—the same as aircraft rate of climb for the entire climb.

9870. Which is a proper control setting for the pressurization system during climb?

1—Rate knob – 300 ft./min.
2—Flight hand. – cruise PA +500 ft.
3—Cabin hand. – desired cabin altitude.
4—Rate knob – MAX.

9871. How is cabin differential pressure reduced to zero when the airplane is landed?

1—By actuation of the cabin compressor disconnect switches.
2—By automatic opening of the differential pressure relief valve.
3—By adjusting the cabin pressure controller to a sea level setting.
4—By automatic opening of the outflow valves.

9872. With both cabin superchargers operating, which procedure would give maximum cooling to lower the cabin temperature?

1—Fly with the aircraft unpressurized and have the cooling turbine operating.
2—Pressurize the aircraft to the maximum rate and have the cooling turbine operating.
3—Fly with the aircraft unpressurized and place the cooling turbine switch OFF.
4—Prepressurize the aircraft prior to takeoff and place the cooling turbine switch to NORMAL.

9873. Which operating procedure applies when using the cabin heater on the ground?

1—The outboard engines must be operating.
2—The heater must not be operated with passengers aboard.
3—Fuel may not be supplied from any tank other than 2M.
4—The heater must not be operated while refueling.

9874. Which conditions are normally required before the heating system can be used on the ground?

A. 28V d.c. electrical supply for cabin heater ignition.
B. Fuel from Nos. 1 and 4 fuel system.
C. Ground blower in operation.
D. 115V a.c. electrical supply for cabin temperature indicators.

1—B and D.
2—A and C.
3—B and C.
4—C and D.

9875. Which components are used to increase the temperature of cabin air?

1—Electric duct heaters and cabin superchargers.
2—Gasoline combustion heater and cabin air superchargers.
3—Radiant panels, combustion heater, and heat pump.
4—Cabin air compressors, electric duct heaters, and butane combustion heaters.

9876. What is the purpose of a mixing valve in an air–conditioning system?

1—Control hot, cool, and cold air supplies.
2—Distribute conditioned air evenly to all parts of the cabin.
3—Combine electrical signals from the temperature control and the cabin thermisters.
4—Dehumidify cabin air by mixing with dry air from the supercharger.

9877. Which power source drives the expansion turbine in the cooling system?

1—Discharge air from the superchargers.
2—A direct current electric motor.
3—Outside ram air.
4—The engine through a drive shaft.

9878. What means is used to obtain the initial reduction of air temperature in the cabin cooling system?

1—An air to air heat exchanger.
2—Expansion of air through the turbine.
3—A freon condenser.
4—An increase in airflow velocity.

9879. What possible sources of cabin cooling are available on the ground?

1—External air–conditioning unit or cooling turbine with both engines Nos. 1 and 4 operating.
2—Cooling turbine with either engine No. 1 or 4 operating.
3—Cabin ground blower, cabin superchargers, or passenger cold air outlets.
4—Air cycle machine, engine bleed air, or external air–conditioning unit.

9880. Which is the correct position of the cockpit temperature control for cooling turbine operation?

1—Cool.
2—Warmer.
3—Off.
4—Normal.

9881. Which action causes the automatic cabin temperature control to be shut off?

1—Placing the cooling turbine switch OFF.
2—Opening the door over the manual switches.
3—Rotating the temperature control to full HOT.
4—Starting the cabin heater on the ground.

9882. What is the effect of operating the emergency cabin altitude control?

1—The cabin pressure control valve is manually opened or closed.
2—Auxiliary ventilation mode is selected.
3—The cabin pressure relief valves are opened or closed.
4—Both cabin superchargers are disengaged.

9883. What should you check if a warning horn sounds intermittently while in cruise flight?

1—Maximum airspeed.
2—Flap position.
3—Engine fire.
4—Cabin altitude.

9884. When the engines are not running, which control position is required to use an external air–conditioner unit to cool the cabin?

1—Battery selector switch – GROUND POWER.
2—Cooling turbine – ON.
3—Cabin temperature control – FULL COLD.
4—Ground blower switch – ON.

9885. Cabin pressurization is adjusted during descent by

1—gradual opening of the vacuum relief valve.
2—gradual closing of the cabin supercharger delivery duct damper.
3—gradual reduction of cabin supercharger air volume output.
4—gradual opening of the outflow valve.

9886. What means can be used to close the cabin pressure control valve in flight?

1—Electrical actuator or pneumatic actuator.
2—CO_2 cylinder actuator or electrical actuator.
3—Pneumatic actuator, electrical actuator, or cable–operated manual control.
4—CO_2 cylinder actuator, pneumatic actuator, or d.c. motor actuator.

9887. Which control should be used in event of a malfunction of one cabin supercharger?

1—Johnson bar.
2—Disconnect switch.
3—Clutch disconnect lever.
4—Emergency cabin pressure control.

9888. What means is used to control the output of a cabin supercharger during a descent?

1—The scoop which admits ambient air to the impeller is gradually closed by an inlet valve.
2—The discharge duct valve is gradually opened to increase the rate of airflow being vented overboard.
3—The pressure of the hot air which drives the supercharger turbine is gradually reduced.
4—The supercharger variable speed drive gradually decreases the speed of the supercharger impeller.

9889. To which altitude can the pressurization system normally maintain a sea level cabin pressure at 5.46 PSI?

1—8,000 ft.
2—12,500 ft.
3—15,000 ft.
4—18,000 ft.

Table 26

OPERATING CONDITIONS		1	2	3
Takeoff Weight		100,500	98,700	89,200
Original CG -	%MAC	12.3	32.5	15.6
Length of MAC		163.6	163.6	163.6
LEMAC		395.2	395.2	395.2
Weight Moved		750	1,000	940
Cargo Locations	FWD	185.0	185.0	185.0
	AFT	715.0	715.0	715.0

9890. At which point in the pressurization system is the amount of airflow regulated to control cabin pressure?

1—Input to the superchargers.
2—Output of the superchargers.
3—Input to the cabin.
4—Outflow from the cabin.

9891. Which control position is proper during the preflight check when ready to start engines?

1—Hydraulic bypass lever – UP.
2—Cooling turbine switch – ON.
3—Battery master switch – ON.
4—Cowl flap switches – POSITIONING.

9892. Which is the most critical area to check for the accumulation of ice or snow on the walk-around inspection?

1—Fuel vent ports.
2—Pitot heads.
3—Control surfaces.
4—Radome.

9893. What item should be checked at the main gear assembly during preflight?

1—Brake wear indicators.
2—Lockout cylinder air pressure preload.
3—Shock strut hydraulic fluid level.
4—Pneumatic brake pressure.

9894. During the before engine start check, you see that the door warning light(s) are out. Which doors make use of safety switches to actuate the door warning light(s)?

1—Only the doors used for emergency evacuation.
2—The main cabin, belly compartment, and landing gear doors.
3—The main cabin and belly compartment doors.
4—Only the main cabin doors.

9895. What is the new CG position after the weight is moved from the forward to the aft location under operating conditions No. 1, Table 26?

1—9.9 percent.
2—13.5 percent.
3—14.7 percent.
4—15.3 percent.

9896. What is the new CG position after the weight is moved from the aft to the forward location under operating conditions No. 2, Table 26?

1—27.9 percent.
2—29.2 percent.
3—32.1 percent.
4—35.8 percent.

9897. What is the new CG position after the weight is moved from the forward to the aft location under operating conditions No. 3, Table 26?

1—12.2 percent.
2—15.9 percent.
3—19.0 percent.
4—21.2 percent.

9898. How are the crew oxygen regulators normally positioned in flight, when oxygen is not in use?

1—Supply on, diluter lever normal, emergency lever on.
2—Supply off, emergency lever off, diluter lever normal.
3—Supply on, diluter lever normal, emergency lever off.
4—Supply on, diluter lever 100 percent oxygen, emergency lever off.

9899. The crew oxygen system bottle valve or line valve is closed and must be opened on preflight. In order to prevent overheating and possible fire, how should the valve be opened?

1—Only enough to cause an outlet pressure indication.
2—After all regulators have been set to emergency.
3—Slowly, all the way.
4—Rapidly, all the way.

Table 27

OPERATING CONDITIONS	1	2	3
Takeoff Weight	103,000	98,200	88,200
Original CG %MAC	10.4	34.5	9.5
Affected CG Limit %MAC	11.0	33.0	11.0
MAC 163.6, LEMAC 395.2, FWD CARGO 185. 0, AFT CARGO 715.0			

9900. What is a disadvantage of using the emergency position on the diluter demand oxygen regulator?

1—Smoke in the flight deck may enter the mask.
2—The mask will receive an emergency mixture of oxygen and ambient air.
3—The mask wearer must inhale forcibly.
4—The oxygen supply will be depleted rapidly, even if the mask is not being worn.

9901. What minimum weight of cargo must be shifted from the forward to the aft cargo location to bring the CG within limits under operating conditions No. 1, Table 27?

1—20 lb.
2—117 lb.
3—195 lb.
4—2,200 lb.

9902. What minimum weight of cargo must be shifted from the aft to the forward cargo location to bring the CG within limits under operating conditions No. 2, Table 27?

1—50 lb.
2—455 lb.
3—610 lb.
4—5,115 lb.

9903. What minimum weight of cargo must be shifted from the forward to the aft cargo location to bring the CG within limits under operating conditions No. 3, Table 27?

1—50 lb.
2—250 lb.
3—410 lb.
4—1,750 lb.

9904. What is the new CG position after removing the weight under operating conditions No. 1, Table 28?

1—21.8 percent.
2—23.3 percent.
3—27.2 percent.
4—31.9 percent.

9905. What is the new CG position after removing the weight under operating conditions No. 2, Table 28?

1—11.5 percent.
2—16.2 percent.
3—20.0 percent.
4—21.8 percent.

9906. What is the new CG position after removing the weight under operating conditions No. 3, Table 28?

1—24.3 percent.
2—25.7 percent.
3—31.8 percent.
4—33.2 percent.

Table 28

OPERATING CONDITIONS	1	2	3
Original Weight	103,000	99,800	101,500
Original CG - %MAC	27.6	15.8	32.5
Length of MAC %MAC	163.6	163.6	163.6
LEMAC - STA	395.2	395.2	395.2
Weight Removed	2,600	2,850	4,050
Location of Weight Removed	715.0	185.0	715.0

Table 29

OPERATING CONDITIONS	1	2	3
Basic Operating Weight	58,000	57,700	58,750
Maximum Zero Fuel Weight	83,200	83,200	83,200
Maximum Landing Weight	88,200	88,200	88,200
Maximum Takeoff Weight	103,000	103,000	103,000
Fuel Tank Load	23,500	19,200	17,000
Estimated Fuel Burn	17,625	16,700	8,050

9907. What is the maximum payload under operating conditions No. 1, Table 29?

1—21,500 lb.
2—25,200 lb.
3—27,375 lb.
4—30,200 lb.

9908. What is the maximum payload under operating conditions No. 2, Table 29?

1—24,200 lb.
2—25,500 lb.
3—26,100 lb.
4—28,600 lb.

9909. What is the maximum payload under operating conditions No. 3, Table 29?

1—19,650 lb.
2—20,500 lb.
3—28,550 lb.
4—29,450 lb.

9910. What is the new CG position after adding weight under operating conditions No. 1, Table 30?

1—21.1 percent.
2—23.4 percent.
3—26.7 percent.
4—27.6 percent.

9911. What is the new CG position after adding weight under operating conditions No. 2, Table 30?

1—12.3 percent.
2—18.7 percent.
3—21.1 percent.
4—22.4 percent.

Table 30

OPERATING CONDITIONS	1	2
Original Weight	96,000	100,000
Original CG - %MAC	20.5	16.7
Length of MAC %MAC	163.6	163.6
LEMAC - STA	395.2	395.2
Weight Added	3,500	2,500
Location of Weight Added	715.0	715.0

Table 31

OPERATING CONDITIONS		1	2
Basic Operating Weight (BOW)		58,000	59,100
BOW CG -	%MAC	15.0	11.5
Passengers	FWD (STA. 172.0)	1,360	1,190
	AFT (STA. 570.0)	9,520	8,500
Cargo	FWD (STA. 217.0)	1,500	2,560
	AFT (STA. 720.0)	3,350	1,540
Fuel 1 & 4M	(STA. 460.0)	4,170 ea.	4,170 ea.
2 & 3M	(STA. 441.0)	3,048 ea.	3,048 ea.
1 & 4A	(STA. 444.0)	1.650 ea.	2,310 ea.
2 & 3A	(STA. 438.0)	1,632 ea.	2,172 ea.
MAC	163.6		
LEMAC	395.2		

9912. What is the loaded CG in percent MAC under operating conditions No. 1, Table 31?

1—28.9 percent.
2—29.7 percent.
3—30.5 percent.
4—32.9 percent.

9913. What is the loaded CG in percent MAC under operating conditions No. 2, Table 31?

1—18.8 percent.
2—21.5 percent.
3—22.9 percent.
4—23.5 percent.

APPENDIX 2

ABBREVIATIONS

The abbreviations listed below are used to identify the aircraft category and reference associated with each test question listed in Appendix 1.

AIRCRAFT CATEGORY ABBREVIATIONS

ALL — All
B–707 — Boeing 707
B–727 — Boeing 727
DC–6 — Douglas DC–6
DC–8 — Douglas DC–8
L–188 — Lockheed L–188
L–382 — Lockheed L–382

REFERENCE ABBREVIATIONS

AC — Advisory Circular
AIM — Airman's Information Manual
B–707 OPM — Boeing 707 Operations Manual
B–727 OPM — Boeing 727 Operations Manual
DC–6 OPM — Douglas DC–6 Operations Manual
DC–8 OPM — Douglas DC–8 Operations Manual
FAR — Federal Aviation Regulations
L–188 OPM — Lockheed L–188 Operations Manual
L–382 OPM — Lockheed L–382 Operations Manual
NAVWEPS — Aerodynamics for Naval Aviators

AIRCRAFT CATEGORY AND REFERENCES

To determine the applicable aircraft category and reference for each question, refer to the question number in the following list.

For example, question 8125 contains subject matter appropriate to all categories of aircraft and the reference is Federal Aviation Regulation, Part 63 (FAR 63). The correct response to question 8125 may be found in FAR 63.

Item	*Aircraft*	*Reference*	*Item*	*Aircraft*	*Reference*	*Item*	*Aircract*	*Reference*
8001.	ALL	AC 91–23A	**8022.**	ALL	NAVWEP	**8043.**	ALL	NAVWEP
8002.	ALL	AC 91–23A	**8023.**	ALL	NAVWEP	**8044.**	ALL	NAVWEP
8003.	ALL	AC 91–23A	**8024.**	ALL	NAVWEP	**8045.**	ALL	AC 61–21A
8004.	ALL	AC 91–23A	**8025.**	ALL	NAVWEP	**8046.**	ALL	AC 61–21A
8005.	ALL	AC 91–23A	**8026.**	ALL	NAVWEP	**8047.**	ALL	AC 61–21A
8006.	ALL	AC 91–23A	**8027.**	ALL	AC 61–21A	**8048.**	ALL	AC 61–23B
8007.	ALL	AC 91–23A	**8028.**	ALL	NAVWEP	**8049.**	ALL	AC 61–21A
8008.	ALL	AC 91–23A	**8029.**	ALL	NAVWEP	**8050.**	ALL	AC 61–23B
8009.	ALL	AC 00–6A	**8030.**	ALL	NAVWEP	**8051.**	ALL	AC 61–21A
8010.	ALL	AC 00–6A	**8031.**	ALL	NAVWEP	**8052.**	ALL	FAR 121
8011.	ALL	AC 00–6A	**8032.**	ALL	AC 61–21A	**8053.**	ALL	FAR 121
8012.	ALL	AC 00–6A	**8033.**	ALL	NAVWEP	**8054.**	ALL	FAR 121
8013.	ALL	AC 00–6A	**8034.**	ALL	AIM	**8055.**	ALL	FAR 121
8014.	ALL	AC 00–6A	**8035.**	ALL	AC 61–23B	**8056.**	ALL	FAR 121
8015.	ALL	AC 00–6A	**8036.**	ALL	AC 61–23B	**8057.**	ALL	FAR 121
8016.	ALL	AC 00–6A	**8037.**	ALL	AC 61–23B	**8058.**	ALL	FAR 121
8017.	ALL	AC 00–6A	**8038.**	ALL	NAVWEP	**8059.**	ALL	FAR 121
8018.	ALL	AC 00–6A	**8039.**	ALL	NAVWEP	**8060.**	ALL	FAR 121
8019.	ALL	AC 00–6A	**8040.**	ALL	AC 61–21A	**8061.**	ALL	FAR 121
8020.	ALL	AC 00–6A	**8041.**	ALL	AC 61–21A	**8062.**	ALL	FAR 121
8021.	ALL	AC 91–23A	**8042.**	ALL	AC 61–23B	**8063.**	ALL	FAR 121

Item	*Aircraft*	*Reference*
8064.	ALL	FAR 121
8065.	ALL	FAR 121
8066.	ALL	FAR 121
8067.	ALL	FAR 121
8068.	ALL	FAR 121
8069.	ALL	FAR 121
8070.	ALL	FAR 121
8071.	ALL	FAR 121
8072.	ALL	FAR 121
8073.	ALL	FAR 121
8074.	ALL	FAR 121
8075.	ALL	FAR 121
8076.	ALL	FAR 121
8077.	ALL	FAR 121
8078.	ALL	FAR 121
8079.	ALL	FAR 121
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8081.	ALL	FAR 121
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8098.	ALL	FAR 121
8099.	ALL	FAR 121
8100.	ALL	FAR 121
8101.	ALL	FAR 121
8102.	ALL	FAR 121
8103.	ALL	FAR 121
8104.	ALL	FAR 121
8105.	ALL	FAR 121
8106.	ALL	FAR 121
8107.	ALL	FAR 121
8108.	ALL	FAR 121
8109.	ALL	FAR 121
8110.	ALL	FAR 121
8111.	ALL	FAR 121
8112.	ALL	FAR 121
8113.	ALL	FAR 121
8114.	ALL	FAR 121
8115.	ALL	FAR 121
8116.	ALL	FAR 121
8117.	ALL	FAR 121
8118.	ALL	FAR 121
8119.	ALL	FAR 121
8120.	ALL	FAR 63
8121.	ALL	FAR 63
8122.	ALL	FAR 63
8123.	ALL	FAR 63
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8135.	ALL	FAR 63
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8137.	ALL	FAR 63
8138.	ALL	FAR 63
8139.	ALL	FAR 63
8140.	ALL	FAR 1
8141.	ALL	FAR 1
8142.	ALL	FAR 1
8143.	ALL	FAR 1
8144.	ALL	FAR 1
8145.	ALL	FAR 1
8146.	ALL	FAR 1
8147.	ALL	FAR 1
8148.	ALL	FAR 1
8149.	ALL	FAR 1
8150.	ALL	FAR 1
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8303.	B–727	B–727 OPM

Item	Aircraft	Reference	Item	Aircraft	Reference	Item	Aircraft	Reference
8304.	B–727	B–727 OPM	8344.	B–727	B–727 OPM	8384.	B–727	B–727 OPM
8305.	B–727	B–727 OPM	8345.	B–727	B–727 OPM	8385.	B–727	B–727 OPM
8306.	B–727	B–727 OPM	8346.	B–727	B–727 OPM	8386.	B–727	B–727 OPM
8307.	B–727	B–727 OPM	8347.	B–727	B–727 OPM	8387.	B–727	B–727 OPM
8308.	B–727	B–727 OPM	8348.	B–727	B–727 OPM	8388.	B–727	B–727 OPM
8309.	B–727	B–727 OPM	8349.	B–727	B–727 OPM	8389.	B–727	B–727 OPM
8310.	B–727	B–727 OPM	8350.	B–727	B–727 OPM	8390.	B–727	B–727 OPM
8311.	B–727	B–727 OPM	8351.	B–727	B–727 OPM	8391.	B–727	B–727 OPM
8312.	B–727	B–727 OPM	8352.	B–727	B–727 OPM	8392.	B–727	B–727 OPM
8313.	B–727	B–727 OPM	8353.	B–727	B–727 OPM	8393.	B–727	B–727 OPM
8314.	B–727	B–727 OPM	8354.	B–727	B–727 OPM	8394.	B–727	B–727 OPM
8315.	B–727	B–727 OPM	8355.	B–727	B–727 OPM	8395.	B–727	B–727 OPM
8316.	B–727	B–727 OPM	8356.	B–727	B–727 OPM	8396.	B–727	B–727 OPM
8317.	B–727	B–727 OPM	8357.	B–727	B–727 OPM	8397.	B–727	B–727 OPM
8318.	B–727	B–727 OPM	8358.	B–727	B–727 OPM	8398.	B–727	B–727 OPM
8319.	B–727	B–727 OPM	8359.	B–727	B–727 OPM	8399.	B–727	B–727 OPM
8320.	B–727	B–727 OPM	8360.	B–727	B–727 OPM	8400.	B–727	B–727 OPM
8321.	B–727	B–727 OPM	8361.	B–727	B–727 OPM	8401.	B–727	B–727 OPM
8322.	B–727	B–727 OPM	8362.	B–727	B–727 OPM	8402.	B–727	B–727 OPM
8323.	B–727	B–727 OPM	8363.	B–727	B–727 OPM	8403.	B–727	B–727 OPM
8324.	B–727	B–727 OPM	8364.	B–727	B–727 OPM	8404.	B–727	B–727 OPM
8325.	B–727	B–727 OPM	8365.	B–727	B–727 OPM	8405.	B–727	B–727 OPM
8326.	B–727	B–727 OPM	8366.	B–727	B–727 OPM	8406.	B–727	B–727 OPM
8327.	B–727	B–727 OPM	8367.	B–727	B–727 OPM	8407.	B–727	B–727 OPM
8328.	B–727	B–727 OPM	8368.	B–727	B–727 OPM	8408.	B–727	B–727 OPM
8329.	B–727	B–727 OPM	8369.	B–727	B–727 OPM	8409.	B–727	B–727 OPM
8330.	B–727	B–727 OPM	8370.	B–727	B–727 OPM	8410.	B–727	B–727 OPM
8331.	B–727	B–727 OPM	8371.	B–727	B–727 OPM	8411.	B–727	B–727 OPM
8332.	B–727	B–727 OPM	8372.	B–727	B–727 OPM	8412.	B–727	B–727 OPM
8333.	B–727	B–727 OPM	8373.	B–727	B–727 OPM	8413.	B–727	B–727 OPM
8334.	B–727	B–727 OPM	8374.	B–727	B–727 OPM	8414.	B–727	B–727 OPM
8335.	B–727	B–727 OPM	8375.	B–727	B–727 OPM	8415.	B–727	B–727 OPM
8336.	B–727	B–727 OPM	8376.	B–727	B–727 OPM	8416.	B–727	B–727 OPM
8337.	B–727	B–727 OPM	8377.	B–727	B–727 OPM	8417.	B–727	B–727 OPM
8338.	B–727	B–727 OPM	8378.	B–727	B–727 OPM	8418.	B–727	B–727 OPM
8339.	B–727	B–727 OPM	8379.	B–727	B–727 OPM	8419.	B–727	B–727 OPM
8340.	B–727	B–727 OPM	8380.	B–727	B–727 OPM	8420.	B–727	B–727 OPM
8341.	B–727	B–727 OPM	8381.	B–727	B–727 OPM	8421.	B–727	B–727 OPM
8342.	B–727	B–727 OPM	8382.	B–727	B–727 OPM	8422.	B–727	B–727 OPM
8343.	B–727	B–727 OPM	8383.	B–727	B–727 OPM	8423.	B–727	B–727 OPM

Item	Aircraft	Reference
8424.	B–727	B–727 OPM
8425.	B–727	B–727 OPM
8426.	B–727	B–727 OPM
8427.	B–727	B–727 OPM
8428.	B–727	B–727 OPM
8429.	B–727	B–727 OPM
8430.	B–727	B–727 OPM
8431.	B–727	B–727 OPM
8432.	B–727	B–727 OPM
8433.	B–727	B–727 OPM
8434.	B–727	B–727 OPM
8435.	B–727	B–727 OPM
8436.	B–727	B–727 OPM
8437.	B–727	B–727 OPM
8438.	B–727	B–727 OPM
8439.	B–727	B–727 OPM
8440.	B–727	B–727 OPM
8441.	B–727	B–727 OPM
8442.	B–727	B–727 OPM
8443.	B–727	B–727 OPM
8444.	B–727	B–727 OPM
8445.	B–727	B–727 OPM
8446.	B–727	B–727 OPM
8447.	B–727	B–727 OPM
8448.	B–727	B–727 OPM
8449.	B–727	B–727 OPM
8450.	B–727	B–727 OPM
8451.	B–727	B–727 OPM
8452.	B–727	B–727 OPM
8453.	B–727	B–727 OPM
8454.	B–727	B–727 OPM
8455.	B–727	B–727 OPM
8456.	B–727	B–727 OPM
8457.	B–727	B–727 OPM
8458.	B–727	B–727 OPM
8459.	B–727	B–727 OPM
8460.	B–727	B–727 OPM
8461.	B–727	B–727 OPM
8462.	B–727	B–727 OPM
8463.	B–727	B–727 OPM
8464.	B–727	B–727 OPM
8465.	B–727	B–727 OPM
8466.	B–727	B–727 OPM
8467.	B–727	B–727 OPM
8468.	B–727	B–727 OPM
8469.	B–727	B–727 OPM
8470.	B–727	B–727 OPM
8471.	B–727	B–727 OPM
8472.	B–727	B–727 OPM
8473.	B–727	B–727 OPM
8474.	B–727	B–727 OPM
8475.	B–727	B–727 OPM
8476.	B–727	B–727 OPM
8477.	B–727	B–727 OPM
8478.	B–727	B–727 OPM
8479.	B–727	B–727 OPM
8480.	B–727	B–727 OPM
8481.	B–727	B–727 OPM
8482.	B–727	B–727 OPM
8483.	B–727	B–727 OPM
8484.	B–727	B–727 OPM
8485.	B–727	B–727 OPM
8486.	B–727	B–727 OPM
8487.	B–727	B–727 OPM
8488.	B–727	B–727 OPM
8489.	B–727	B–727 OPM
8490.	B–727	B–727 OPM
8491.	B–727	B–727 OPM
8492.	B–727	B–727 OPM
8493.	B–727	B–727 OPM
8494.	B–727	B–727 OPM
8495.	B–727	B–727 OPM
8496.	B–727	B–727 OPM
8497.	B–727	B–727 OPM
8498.	B–727	B–727 OPM
8499.	B–727	B–727 OPM
8500.	B–727	B–727 OPM
8501.	B–727	B–727 OPM
8502.	B–727	B–727 OPM
8503.	B–727	B–727 OPM
8504.	B–727	B–727 OPM
8505.	B–727	B–727 OPM
8506.	B–727	B–727 OPM
8507.	B–727	B–727 OPM
8508.	B–727	B–727 OPM
8509.	B–727	B–727 OPM
8510.	B–727	B–727 OPM
8511.	B–727	B–727 OPM
8512.	B–727	B–727 OPM
8513.	B–727	B–727 OPM
8514.	B–727	B–727 OPM
8515.	B–727	B–727 OPM
8516.	B–727	B–727 OPM
8517.	B–727	B–727 OPM
8518.	B–727	B–727 OPM
8519.	B–727	B–727 OPM
8520.	B–727	B–727 OPM
8521.	B–727	B–727 OPM
8522.	B–727	B–727 OPM
8523.	B–727	B–727 OPM
8524.	B–727	B–727 OPM
8525.	B–727	B–727 OPM
8526.	B–727	B–727 OPM
8527.	B–727	B–727 OPM
8528.	B–727	B–727 OPM
8529.	B–727	B–727 OPM
8530.	B–727	B–727 OPM
8531.	B–727	B–727 OPM
8532.	B–727	B–727 OPM
8533.	B–727	B–727 OPM
8534.	B–727	B–727 OPM
8535.	B–727	B–727 OPM
8536.	B–727	B–727 OPM
8537.	B–727	B–727 OPM
8538.	B–727	B–727 OPM
8539.	B–727	B–727 OPM
8540.	B–727	B–727 OPM
8541.	B–727	B–727 OPM
8542.	B–727	B–727 OPM
8543.	B–727	B–727 OPM

Item	Aircraft	Reference
8544.	B–727	B–727 OPM
8545.	B–727	B–727 OPM
8546.	B–727	B–727 OPM
8547.	B–727	B–727 OPM
8548.	B–727	B–727 OPM
8549.	B–727	B–727 OPM
8550.	B–727	B–727 OPM
8551.	B–727	B–727 OPM
8552.	B–727	B–727 OPM
8553.	B–727	B–727 OPM
8554.	B–727	B–727 OPM
8555.	B–727	B–727 OPM
8556.	B–727	B–727 OPM
8557.	B–727	B–727 OPM
8558.	B–727	B–727 OPM
8559.	B–727	B–727 OPM
8560.	B–727	B–727 OPM
8561.	B–727	B–727 OPM
8562.	B–727	B–727 OPM
8563.	B–727	B–727 OPM
8564.	B–727	B–727 OPM
8565.	B–727	B–727 OPM
8566.	B–727	B–727 OPM
8567.	B–727	B–727 OPM
8568.	B–727	B–727 OPM
8569.	B–727	B–727 OPM
8570.	B–727	B–727 OPM
8571.	B–727	B–727 OPM
8572.	B–727	B–727 OPM
8573.	B–727	AC 91–23A
8574.	B–727	AC 91–23A
8575.	B–727	AC 91–23A
8576.	B–727	B–727 OPM
8577.	B–727	B–727 OPM
8578.	B–727	AC 91–23A
8579.	B–727	AC 91–23A
8580.	B–727	AC 91–23A
8581.	B–727	AC 91–23A
8582.	B–727	AC 91–23A
8583.	B–727	AC 91–23A
8584.	B–727	AC 91–23A
8585.	B–727	AC 91–23A
8586.	B–727	AC 91–23A
8587.	B–727	AC 91–23A
8588.	B–727	AC 91–23A
8589.	B–727	AC 91–23A
8590.	B–727	AC 91–23A
8591.	B–727	AC 91–23A
8592.	B–727	AC 91–23A
8593.	B–727	AC 91–23A
8594.	B–727	AC 91–23A
8595.	B–727	AC 91–23A
8596.	B–727	AC91–23A
8597.	B–727	AC 91–23A
8598.	B–727	AC 91–23A
8599.	B–727	AC 91–23A
8600.	B–727	AC 91–23A
8601.	B–707	B–707 OPM
8602.	B–707	B–707 OPM
8603.	B–707	B–707 OPM
8604.	B–707	B–707 OPM
8605.	B–707	B–707 OPM
8606.	B–707	B–707 OPM
8607.	B–707	B–707 OPM
8608.	B–707	B–707 OPM
8609.	B–707	B–707 OPM
8610.	B–707	B–707 OPM
8611.	B–707	B–707 OPM
8612.	B–707	B–707 OPM
8613.	B–707	B–707 OPM
8614.	B–707	B–707 OPM
8615.	B–707	B–707 OPM
8616.	B–707	B–707 OPM
8617.	B–707	B–707 OPM
8618.	B–707	B–707 OPM
8619.	B–707	B–707 OPM
8620.	B–707	B–707 OPM
8621.	B–707	B–707 OPM
8622.	B–707	B–707 OPM
8623.	B–707	B–707 OPM
8624.	B–707	B–707 OPM
8625.	B–707	B–707 OPM
8626.	B–707	B–707 OPM
8627.	B–707	B–707 OPM
8628.	B–707	B–707 OPM
8629.	B–707	B–707 OPM
8630.	B–707	B–707 OPM
8631.	B–707	B–707 OPM
8632.	B–707	B–707 OPM
8633.	B–707	B–707 OPM
8634.	B–707	B–707 OPM
8635.	B–707	B–707 OPM
8636.	B–707	B–707 OPM
8637.	B–707	B–707 OPM
8638.	B–707	B–707 OPM
8639.	B–707	B–707 OPM
8640.	B–707	B–707 OPM
8641.	B–707	B–707 OPM
8642.	B–707	B–707 OPM
8643.	B–707	B–707 OPM
8644.	B–707	B–707 OPM
8645.	B–707	B–707 OPM
8646.	B–707	B–707 OPM
8647.	B–707	B–707 OPM
8648.	B–707	B–707 OPM
8649.	B–707	B–707 OPM
8650.	B–707	B–707 OPM
8651.	B–707	B–707 OPM
8652.	B–707	B–707 OPM
8653.	B–707	B–707 OPM
8654.	B–707	B–707 OPM
8655.	B–707	B–707 OPM
8656.	B–707	B–707 OPM
8657.	B–707	B–707 OPM
8658.	B–707	B–707 OPM
8659.	B–707	B–707 OPM
8660.	B–707	B–707 OPM
8661.	B–707	B–707 OPM
8662.	B–707	B–707 OPM
8663.	B–707	B–707 OPM

Item	Aircraft	Reference
8664.	B–707	B–707 OPM
8665.	B–707	B–707 OPM
8666.	B–707	B–707 OPM
8667.	B–707	B–707 OPM
8668.	B–707	B–707 OPM
8669.	B–707	B–707 OPM
8670.	B–707	B–707 OPM
8671.	B–707	B–707 OPM
8672.	B–707	B–707 OPM
8673.	B–707	B–707 OPM
8674.	B–707	B–707 OPM
8675.	B–707	B–707 OPM
8676.	B–707	B–707 OPM
8677.	B–707	B–707 OPM
8678.	B–707	B–707 OPM
8679.	B–707	B–707 OPM
8680.	B–707	B–707 OPM
8681.	B–707	B–707 OPM
8682.	B–707	B–707 OPM
8683.	B–707	B–707 OPM
8684.	B–707	B–707 OPM
8685.	B–707	B–707 OPM
8686.	B–707	B–707 OPM
8687.	B–707	B–707 OPM
8688.	B–707	B–707 OPM
8689.	B–707	B–707 OPM
8690.	B–707	B–707 OPM
8691.	B–707	B–707 OPM
8692.	B–707	B–707 OPM
8693.	B–707	B–707 OPM
8694.	B–707	B–707 OPM
8695.	B–707	B–707 OPM
8696.	B–707	B–707 OPM
8697.	B–707	B–707 OPM
8698.	B–707	B–707 OPM
8699.	B–707	B–707 OPM
8700.	B–707	B–707 OPM
8701.	B–707	B–707 OPM
8702.	B–707	B–707 OPM
8703.	B–707	B–707 OPM
8704.	B–707	B–707 OPM
8705.	B–707	B–707 OPM
8706.	B–707	B–707 OPM
8707.	B–707	B–707 OPM
8708.	B–707	B–707 OPM
8709.	B–707	B–707 OPM
8710.	B–707	B–707 OPM
8711.	B–707	B–707 OPM
8712.	B–707	B–707 OPM
8713.	B–707	B–707 OPM
8714.	B–707	B–707 OPM
8715.	B–707	B–707 OPM
8716.	B–707	B–707 OPM
8717.	B–707	B–707 OPM
8718.	B–707	B–707 OPM
8719.	B–707	B–707 OPM
8720.	B–707	B–707 OPM
8721.	B–707	B–707 OPM
8722.	B–707	B–707 OPM
8723.	B–707	B–707 OPM
8724.	B–707	B–707 OPM
8725.	B–707	B–707 OPM
8726.	B–707	B–707 OPM
8727.	B–707	B–707 OPM
8728.	B–707	B–707 OPM
8729.	B–707	B–707 OPM
8730.	B–707	B–707 OPM
8731.	B–707	B–707 OPM
8732.	B–707	B–707 OPM
8733.	B–707	B–707 OPM
8734.	B–707	B–707 OPM
8735.	B–707	B–707 OPM
8736.	B–707	B–707 OPM
8737.	B–707	B–707 OPM
8738.	B–707	B–707 OPM
8739.	B–707	B–707 OPM
8740.	B–707	B–707 OPM
8741.	B–707	B–707 OPM
8742.	B–707	B–707 OPM
8743.	B–707	B–707 OPM
8744.	B–707	B–707 OPM
8745.	B–707	B–707 OPM
8746.	B–707	B–707 OPM
8747.	B–707	B–707 OPM
8748.	B–707	B–707 OPM
8749.	B–707	B–707 OPM
8750.	B–707	B–707 OPM
8751.	B–707	B–707 OPM
8752.	B–707	B–707 OPM
8753.	B–707	B–707 OPM
8754.	B–707	B–707 OPM
8755.	B–707	B–707 OPM
8756.	B–707	B–707 OPM
8757.	B–707	B–707 OPM
8758.	B–707	B–707 OPM
8759.	B–707	B–707 OPM
8760.	B–707	B–707 OPM
8761.	B–707	B–707 OPM
8762.	B–707	B–707 OPM
8763.	B–707	B–707 OPM
8764.	B–707	B–707 OPM
8765.	B–707	B–707 OPM
8766.	B–707	B–707 OPM
8767.	B–707	B–707 OPM
8768.	B–707	B–707 OPM
8769.	B–707	B–707 OPM
8770.	B–707	B–707 OPM
8771.	B–707	B–707 OPM
8772.	B–707	B–707 OPM
8773.	B–707	B–707 OPM
8774.	B–707	B–707 OPM
8775.	B–707	B–707 OPM
8776.	B–707	B–707 OPM
8777.	B–707	B–707 OPM
8778.	B–707	B–707 OPM
8779.	B–707	B–707 OPM
8780.	B–707	B–707 OPM
8781.	B–707	B–707 OPM
8782.	B–707	B–707 OPM
8783.	B–707	B–707 OPM

Item	Aircraft	Reference
8784.	B–707	B–707 OPM
8785.	B–707	B–707 OPM
8786.	B–707	B–707 OPM
8787.	B–707	B–707 OPM
8788.	B–707	B–707 OPM
8789.	B–707	B–707 OPM
8790.	B–707	B–707 OPM
8791.	B–707	B–707 OPM
8792.	B–707	B–707 OPM
8793.	B–707	B–707 OPM
8794.	B–707	B–707 OPM
8795.	B–707	B–707 OPM
8796.	B–707	B–707 OPM
8797.	B–707	B–707 OPM
8798.	B–707	B–707 OPM
8799.	B–707	B–707 OPM
8800.	B–707	B–707 OPM
8801.	B–707	B–707 OPM
8802.	B–707	B–707 OPM
8803.	B–707	B–707 OPM
8804.	B–707	B–707 OPM
8805.	B–707	B–707 OPM
8806.	B–707	B–707 OPM
8807.	B–707	B–707 OPM
8808.	B–707	B–707 OPM
8809.	B–707	B–707 OPM
8810.	B–707	B–707 OPM
8811.	B–707	B–707 OPM
8812.	B–707	B–707 OPM
8813.	B–707	B–707 OPM
8814.	B–707	B–707 OPM
8815.	B–707	B–707 OPM
8816.	B–707	AC 91–23A
8817.	B–707	AC 91–23A
8818.	B–707	AC 91–23A
8819.	B–707	AC 91–23A
8820.	B–707	AC 91–23A
8821.	B–707	AC 91–23A
8822.	B–707	AC 61–23B
8823.	B–707	AC 61–23B
8824.	B–707	AC 61–23B
8825.	B–707	AC 61–23B
8826.	B–707	AC 61–23B
8827.	DC–8	DC–8 OPM
8828.	DC–8	DC–8 OPM
8829.	DC–8	DC–8 OPM
8830.	DC–8	DC–8 OPM
8831.	DC–8	DC–8 OPM
8832.	DC–8	DC–8 OPM
8833.	DC–8	DC–8 OPM
8834.	DC–8	DC–8 OPM
8835.	DC–8	DC–8 OPM
8836.	DC–8	DC–8 OPM
8837.	DC–8	DC–8 OPM
8838.	DC–8	DC–8 OPM
8839.	DC–8	DC–8 OPM
8840.	DC–8	DC–8 OPM
8841.	DC–8	DC–8 OPM
8842.	DC–8	DC–8 OPM
8843.	DC–8	DC–8 OPM
8844.	DC–8	DC–8 OPM
8845.	DC–8	DC–8 OPM
8846.	DC–8	DC–8 OPM
8847.	DC–8	DC–8 OPM
8848.	DC–8	DC–8 OPM
8849.	DC–8	DC–8 OPM
8850.	DC–8	DC–8 OPM
8851.	DC–8	DC–8 OPM
8852.	DC–8	DC–8 OPM
8853.	DC–8	DC–8 OPM
8854.	DC–8	DC–8 OPM
8855.	DC–8	DC–8 OPM
8856.	DC–8	DC–8 OPM
8857.	DC–8	DC–8 OPM
8858.	DC–8	DC–8 OPM
8859.	DC–8	DC–8 OPM
8860.	DC–8	DC–8 OPM
8861.	DC–8	DC–8 OPM
8862.	DC–8	DC–8 OPM
8863.	DC–8	DC–8 OPM
8864.	DC–8	DC–8 OPM
8865.	DC–8	DC–8 OPM
8866.	DC–8	DC–8 OPM
8867.	DC–8	DC–8 OPM
8868.	DC–8	DC–8 OPM
8869.	DC–8	DC–8 OPM
8870.	DC–8	DC–8 OPM
8871.	DC–8	DC–8 OPM
8872.	DC–8	DC–8 OPM
8873.	DC–8	DC–8 OPM
8874.	DC–8	DC–8 OPM
8875.	DC–8	DC–8 OPM
8876.	DC–8	DC–8 OPM
8877.	DC–8	DC–8 OPM
8878.	DC–8	DC–8 OPM
8879.	DC–8	DC–8 OPM
8880.	DC–8	DC–8 OPM
8881.	DC–8	DC–8 OPM
8882.	DC–8	DC–8 OPM
8883.	DC–8	DC–8 OPM
8884.	DC–8	DC–8 OPM
8885.	DC–8	DC–8 OPM
8886.	DC–8	DC–8 OPM
8887.	DC–8	DC–8 OPM
8888.	DC–8	DC–8 OPM
8889.	DC–8	DC–8 OPM
8890.	DC–8	DC–8 OPM
8891.	DC–8	DC–8 OPM
8892.	DC–8	DC–8 OPM
8893.	DC–8	DC–8 OPM
8894.	DC–8	DC–8 OPM
8895.	DC–8	DC–8 OPM
8896.	DC–8	DC–8 OPM
8897.	DC–8	DC–8 OPM
8898.	DC–8	DC–8 OPM
8899.	DC–8	DC–8 OPM
8900.	DC–8	DC–8 OPM
8901.	DC–8	DC–8 OPM
8902.	DC–8	DC–8 OPM
8903.	DC–8	DC–8 OPM

Item	Aircraft	Reference
8904.	DC–8	DC–8 OPM
8905.	DC–8	DC–8 OPM
8906.	DC–8	DC–8 OPM
8907.	DC–8	DC–8 OPM
8908.	DC–8	DC–8 OPM
8909.	DC–8	DC–8 OPM
8910.	DC–8	DC–8 OPM
8911.	DC–8	DC–8 OPM
8912.	DC–8	DC–8 OPM
8913.	DC–8	DC–8 OPM
8914.	DC–8	DC–8 OPM
8915.	DC–8	DC–8 OPM
8916.	DC–8	DC–8 OPM
8917.	DC–8	DC–8 OPM
8918.	DC–8	DC–8 OPM
8919.	DC–8	DC–8 OPM
8920.	DC–8	DC–8 OPM
8921.	DC–8	DC–8 OPM
8922.	DC–8	DC–8 OPM
8923.	DC–8	DC–8 OPM
8924.	DC–8	DC–8 OPM
8925.	DC–8	DC–8 OPM
8926.	DC–8	DC–8 OPM
8927.	DC–8	DC–8 OPM
8928.	DC–8	DC–8 OPM
8929.	DC–8	DC–8 OPM
8930.	DC–8	DC–8 OPM
8931.	DC–8	DC–8 OPM
8932.	DC–8	DC–8 OPM
8933.	DC–8	DC–8 OPM
8934.	DC–8	DC–8 OPM
8935.	DC–8	DC–8 OPM
8936.	DC–8	DC–8 OPM
8937.	DC–8	DC–8 OPM
8938.	DC–8	DC–8 OPM
8939.	DC–8	DC–8 OPM
8940.	DC–8	DC–8 OPM
8941.	DC–8	DC–8 OPM
8942.	DC–8	DC–8 OPM
8943.	DC–8	DC–8 OPM
8944.	DC–8	DC–8 OPM
8945.	DC–8	DC–8 OPM
8946.	DC–8	DC–8 OPM
8947.	DC–8	DC–8 OPM
8948.	DC–8	DC–8 OPM
8949.	DC–8	DC–8 OPM
8950.	DC–8	DC–8 OPM
8951.	DC–8	DC–8 OPM
8952.	DC–8	DC–8 OPM
8953.	DC–8	DC–8 OPM
8954.	DC–8	DC–8 OPM
8955.	DC–8	DC–8 OPM
8956.	DC–8	DC–8 OPM
8957.	DC–8	DC–8 OPM
8958.	DC–8	DC–8 OPM
8959.	DC–8	DC–8 OPM
8960.	DC–8	DC–8 OPM
8961.	DC–8	DC–8 OPM
8962.	DC–8	DC–8 OPM
8963.	DC–8	DC–8 OPM
8964.	DC–8	DC–8 OPM
8965.	DC–8	DC–8 OPM
8966.	DC–8	DC–8 OPM
8967.	DC–8	DC–8 OPM
8968.	DC–8	DC–8 OPM
8969.	DC–8	DC–8 OPM
8970.	DC–8	DC–8 OPM
8971.	DC–8	DC–8 OPM
8972.	DC–8	AC 91–23A
8973.	DC–8	AC 91–23A
8974.	DC–8	AC 91–23A
8975.	DC–8	AC 91–23A
8976.	DC–8	AC 91–23A
8977.	DC–8	AC 91–23A
8978.	DC–8	AC 91–23A
8979.	DC–8	AC 91–23A
8980.	DC–8	AC 91–23A
8981.	DC–8	AC 91–23A
8982.	DC–8	AC 91–23A
8983.	DC–8	AC 91–23A
8984.	DC–8	AC 91–23A
8985.	L–382	L–382 OPM
8986.	L–382	L–382 OPM
8987.	L–382	L–382 OPM
8988.	L–382	L–382 OPM
8989.	L–382	L–382 OPM
8990.	L–382	L–382 OPM
8991.	L–382	L–382 OPM
8992.	L–382	L–382 OPM
8993.	L–382	L–382 OPM
8994.	L–382	L–382 OPM
8995.	L–382	L–382 OPM
8996.	L–382	L–382 OPM
8997.	L–382	L–382 OPM
8998.	L–382	L–382 OPM
8999.	L–382	L–382 OPM
9000.	L–382	L–382 OPM
9001.	L–382	L–382 OPM
9002.	L–382	L–382 OPM
9003.	L–382	L–382 OPM
9004.	L–382	L–382 OPM
9005.	L–382	L–382 OPM
9006.	L–382	L–382 OPM
9007.	L–382	L–382 OPM
9008.	L–382	L–382 OPM
9009.	L–382	L–382 OPM
9010.	L–382	L–382 OPM
9011.	L–382	L–382 OPM
9012.	L–382	L–382 OPM
9013.	L–382	L–382 OPM
9014.	L–382	L–382 OPM
9015.	L–382	L–382 OPM
9016.	L–382	L–382 OPM
9017.	L–382	L–382 OPM
9018.	L–382	L–382 OPM
9019.	L–382	L–382 OPM
9020.	L–382	L–382 OPM
9021.	L–382	L–382 OPM
9022.	L–382	L–382 OPM
9023.	L–382	L–382 OPM

Item	*Aircraft*	*Reference*
9024.	L–382	L–382 OPM
9025.	L–382	L–382 OPM
9026.	L–382	L–382 OPM
9027.	L–382	L–382 OPM
9028.	L–382	L–382 OPM
9029.	L–382	L–382 OPM
9030.	L–382	L–382 OPM
9031.	L–382	L–382 OPM
9032.	L–382	L–382 OPM
9033.	L–382	L–382 OPM
9034.	L–382	L–382 OPM
9035.	L–382	L–382 OPM
9036.	L–382	L–382 OPM
9037.	L–382	L–382 OPM
9038.	L–382	L–382 OPM
9039.	L–382	L–382 OPM
9040.	L–382	L–382 OPM
9041.	L–382	L–382 OPM
9042.	L–382	L–382 OPM
9043.	L–382	L–382 OPM
9044.	L–382	L–382 OPM
9045.	L–382	L–382 OPM
9046.	L–382	L–382 OPM
9047.	L–382	L–382 OPM
9048.	L–382	L–382 OPM
9049.	L–382	L–382 OPM
9050.	L–382	L–382 OPM
9051.	L–382	L–382 OPM
9052.	L–382	L–382 OPM
9053.	L–382	L–382 OPM
9054.	L–382	L–382 OPM
9055.	L–382	L–382 OPM
9056.	L–382	L–382 OPM
9057.	L–382	L–382 OPM
9058.	L–382	L–382 OPM
9059.	L–382	L–382 OPM
9060.	L–382	L–382 OPM
9061.	L–382	L–382 OPM
9062.	L–382	L–382 OPM
9063.	L–382	L–382 OPM
9064.	L–382	L–382 OPM
9065.	L–382	L–382 OPM
9066.	L–382	L–382 OPM
9067.	L–382	L–382 OPM
9068.	L–382	L–382 OPM
9069.	L–382	L–382 OPM
9070.	L–382	L–382 OPM
9071.	L–382	L–382 OPM
9072.	L–382	L–382 OPM
9073.	L–382	L–382 OPM
9074.	L–382	L–382 OPM
9075.	L–382	L–382 OPM
9076.	L–382	L–382 OPM
9077.	L–382	L–382 OPM
9078.	L–382	L–382 OPM
9079.	L–382	L–382 OPM
9080.	L–382	L–382 OPM
9081.	L–382	L–382 OPM
9082.	L–382	L–382 OPM
9083.	L–382	L–382 OPM
9084.	L–382	L–382 OPM
9085.	L–382	L–382 OPM
9086.	L–382	L–382 OPM
9087.	L–382	L–382 OPM
9088.	L–382	L–382 OPM
9089.	L–382	L–382 OPM
9090.	L–382	L–382 OPM
9091.	L–382	L–382 OPM
9092.	L–382	L–382 OPM
9093.	L–382	L–382 OPM
9094.	L–382	L–382 OPM
9095.	L–382	L–382 OPM
9096.	L–382	L–382 OPM
9097.	L–382	L–382 OPM
9098.	L–382	L–382 OPM
9099.	L–382	L–382 OPM
9100.	L–382	L–382 OPM
9101.	L–382	L–382 OPM
9102.	L–382	L–382 OPM
9103.	L–382	L–382 OPM
9104.	L–382	L–382 OPM
9105.	L–382	L–382 OPM
9106.	L–382	L–382 OPM
9107.	L–382	L–382 OPM
9108.	L–382	L–382 OPM
9109.	L–382	L–382 OPM
9110.	L–382	L–382 OPM
9111.	L–382	L–382 OPM
9112.	L–382	L–382 OPM
9113.	L–382	L–382 OPM
9114.	L–382	L–382 OPM
9115.	L–382	L–382 OPM
9116.	L–382	L–382 OPM
9117.	L–382	L–382 OPM
9118.	L–382	L–382 OPM
9119.	L–382	L–382 OPM
9120.	L–382	L–382 OPM
9121.	L–382	L–382 OPM
9122.	L–382	L–382 OPM
9123.	L–382	L–382 OPM
9124.	L–382	L–382 OPM
9125.	L–382	L–382 OPM
9126.	L–382	L–382 OPM
9127.	L–382	L–382 OPM
9128.	L–382	L–382 OPM
9129.	L–382	L–382 OPM
9130.	L–382	L–382 OPM
9131.	L–382	L–382 OPM
9132.	L–382	L–382 OPM
9133.	L–382	L–382 OPM
9134.	L–382	L–382 OPM
9135.	L–382	L–382 OPM
9136.	L–382	L–382 OPM
9137.	L–382	L–382 OPM
9138.	L–382	L–382 OPM
9139.	L–382	L–382 OPM
9140.	L–382	L–382 OPM
9141.	L–382	L–382 OPM
9142.	L–382	L–382 OPM
9143.	L–382	L–382 OPM

Item	Aircraft	Reference
9144.	L-382	L-382 OPM
9145.	L-382	L-382 OPM
9146.	L-382	L-382 OPM
9147.	L-382	L-382 OPM
9148.	L-382	L-382 OPM
9149.	L-382	L-382 OPM
9150.	L-382	L-382 OPM
9151.	L-382	L-382 OPM
9152.	L-382	L-382 OPM
9153.	L-382	L-382 OPM
9154.	L-382	L-382 OPM
9155.	L-382	L-382 OPM
9156.	L-382	L-382 OPM
9157.	L-382	L-382 OPM
9158.	L-382	L-382 OPM
9159.	L-382	L-382 OPM
9160.	L-382	L-382 OPM
9161.	L-382	L-382 OPM
9162.	L-382	L-382 OPM
9163.	L-382	L-382 OPM
9164.	L-382	L-382 OPM
9165.	L-382	L-382 OPM
9166.	L-382	L-382 OPM
9167.	L-382	L-382 OPM
9168.	L-382	L-382 OPM
9169.	L-382	L-382 OPM
9170.	L-382	L-382 OPM
9171.	L-382	L-382 OPM
9172.	L-382	L-382 OPM
9173.	L-382	L-382 OPM
9174.	L-382	L-382 OPM
9175.	L-382	L-382 OPM
9176.	L-382	L-382 OPM
9177.	L-382	L-382 OPM
9178.	L-382	L-382 OPM
9179.	L-382	L-382 OPM
9180.	L-382	L-382 OPM
9181.	L-382	L-382 OPM
9182.	L-382	L-382 OPM
9183.	L-382	L-382 OPM
9184.	L-382	L-382 OPM
9185.	L-382	L-382 OPM
9186.	L-382	L-382 OPM
9187.	L-382	L-382 OPM
9188.	L-382	L-382 OPM
9189.	L-382	L-382 OPM
9190.	L-382	L-382 OPM
9191.	L-382	L-382 OPM
9192.	L-382	L-382 OPM
9193.	L-382	L-382 OPM
9194.	L-382	L-382 OPM
9195.	L-382	L-382 OPM
9196.	L-382	L-382 OPM
9197.	L-382	L-382 OPM
9198.	L-382	L-382 OPM
9199.	L-382	L-382 OPM
9200.	L-382	L-382 OPM
9201.	L-382	L-382 OPM
9202.	L-382	L-382 OPM
9203.	L-382	L-382 OPM
9204.	L-382	L-382 OPM
9205.	L-382	L-382 OPM
9206.	L-382	L-382 OPM
9207.	L-382	L-382 OPM
9208.	L-382	L-382 OPM
9209.	L-382	L-382 OPM
9210.	L-382	L-382 OPM
9211.	L-382	L-382 OPM
9212.	L-382	L-382 OPM
9213.	L-382	L-382 OPM
9214.	L-382	L-382 OPM
9215.	L-382	L-382 OPM
9216.	L-382	L-382 OPM
9217.	L-382	L-382 OPM
9218.	L-382	L-382 OPM
9219.	L-382	L-382 OPM
9220.	L-382	L-382 OPM
9221.	L-382	L-382 OPM
9222.	L-382	L-382 OPM
9223.	L-382	L-382 OPM
9224.	L-382	L-382 OPM
9225.	L-382	L-382 OPM
9226.	L-382	L-382 OPM
9227.	L-382	L-382 OPM
9228.	L-382	L-382 OPM
9229.	L-382	L-382 OPM
9230.	L-382	L-382 OPM
9231.	L-382	L-382 OPM
9232.	L-382	L-382 OPM
9233.	L-382	L-382 OPM
9234.	L-382	L-382 OPM
9235.	L-382	L-382 OPM
9236.	L-382	L-382 OPM
9237.	L-382	L-382 OPM
9238.	L-382	L-382 OPM
9239.	L-382	L-382 OPM
9240.	L-382	L-382 OPM
9241.	L-382	L-382 OPM
9242.	L-382	L-382 OPM
9243.	L-382	L-382 OPM
9244.	L-382	L-382 OPM
9245.	L-382	L-382 OPM
9246.	L-382	L-382 OPM
9247.	L-382	L-382 OPM
9248.	L-382	L-382 OPM
9249.	L-382	L-382 OPM
9250.	L-382	L-382 OPM
9251.	L-382	L-382 OPM
9252.	L-382	L-382 OPM
9253.	L-382	L-382 OPM
9254.	L-382	L-382 OPM
9255.	L-382	L-382 OPM
9256.	L-382	L-382 OPM
9257.	L-382	L-382 OPM
9258.	L-382	L-382 OPM
9259.	L-382	L-382 OPM
9260.	L-382	L-382 OPM
9261.	L-382	L-382 OPM
9262.	L-382	L-382 OPM
9263.	L-382	L-382 OPM

Item	Aircraft	Reference
9264.	L–382	L–382 OPM
9265.	L–382	L–382 OPM
9266.	L–382	L–382 OPM
9267.	L–382	L–382 OPM
9268.	L–382	L–382 OPM
9269.	L–382	L–382 OPM
9270.	L–382	L–382 OPM
9271.	L–382	L–382 OPM
9272.	L–382	L–382 OPM
9273.	L–382	L–382 OPM
9274.	L–382	L–382 OPM
9275.	L–382	L–382 OPM
9276.	L–382	L–382 OPM
9277.	L–382	L–382 OPM
9278.	L–382	L–382 OPM
9279.	L–382	L–382 OPM
9280.	L–382	L–382 OPM
9281.	L–382	L–382 OPM
9282.	L–382	L–382 OPM
9283.	L–382	L–382 OPM
9284.	L–382	L–382 OPM
9285.	L–382	AC 91–23A
9286.	L–382	AC 91–23A
9287.	L–382	AC 91–23A
9288.	L–382	AC 91–23A
9289.	L–382	AC 91–23A
9290.	L–382	AC 91–23A
9291.	L–382	AC 91–23A
9292.	L–382	AC 91–23A
9293.	L–382	AC 91–23A
9294.	L–382	AC 91–23A
9295.	L–382	AC 91–23A
9296.	L–382	AC 91–23A
9297.	L–382	L–382 OPM
9298.	L–382	AC 91–23A
9299.	L–382	AC 91–23A
9300.	L–382	AC 91–23A
9301.	L–382	AC 91–23A
9302.	L–382	AC 91–23A
9303.	L–382	AC 91–23A
9304.	L–188	L–188 OPM
9305.	L–188	L–188 OPM
9306.	L–188	L–188 OPM
9307.	L–188	L–188 OPM
9308.	L–188	L–188 OPM
9309.	L–188	L–188 OPM
9310.	L–188	L–188 OPM
9311.	L–188	L–188 OPM
9312.	L–188	L–188 OPM
9313.	L–188	L–188 OPM
9314.	L–188	L–188 OPM
9315.	L–188	L–188 OPM
9316.	L–188	L–188 OPM
9317.	L–188	L–188 OPM
9318.	L–188	L–188 OPM
9319.	L–188	L–188 OPM
9320.	L–188	L–188 OPM
9321.	L–188	L–188 OPM
9322.	L–188	L–188 OPM
9323.	L–188	L–188 OPM
9224.	L–188	L–188 OPM
9225.	L–188	L–188 OPM
9326.	L–188	L–188 OPM
9327.	L–188	L–188 OPM
9328.	L–188	L–188 OPM
9329.	L–188	L–188 OPM
9330.	L–188	L–188 OPM
9331.	L–188	L–188 OPM
9332.	L–188	L–188 OPM
9333.	L–188	L–188 OPM
9334.	L–188	L–188 OPM
9335.	L–188	L–188 OPM
9336.	L–188	L–188 OPM
9337.	L–188	L–188 OPM
9338.	L–188	L–188 OPM
9339.	L–188	L–188 OPM
9340.	L–188	L–188 OPM
9341.	L–188	L–188 OPM
9342.	L–188	L–188 OPM
9343.	L–188	L–188 OPM
9344.	L–188	L–188 OPM
9345.	L–188	L–188 OPM
9346.	L–188	L–188 OPM
9347.	L–188	L–188 OPM
9348.	L–188	L–188 OPM
9349.	L–188	L–188 OPM
9350.	L–188	L–188 OPM
9351.	L–188	L–188 OPM
9352.	L–188	L–188 OPM
9353.	L–188	L–188 OPM
9354.	L–188	L–188 OPM
9355.	L–188	L–188 OPM
9356.	L–188	L–188 OPM
9357.	L–188	L–188 OPM
9358.	L–188	L–188 OPM
9359.	L–188	L–188 OPM
9360.	L–188	L–188 OPM
9361.	L–188	L–188 OPM
9362.	L–188	L–188 OPM
9363.	L–188	L–188 OPM
9364.	L–188	L–188 OPM.
9365.	L–188	L–188 OPM
9366.	L–188	L–188 OPM
9367.	L–188	L–188 OPM
9368.	L–188	L–188 OPM
9369.	L–188	L–188 OPM
9370.	L–188	L–188 OPM
9371.	L–188	L–188 OPM
9372.	L–188	L–188 OPM
9373.	L–188	L–188 OPM
9374.	L–188	L–188 OPM
9375.	L–188	L–188 OPM
9376.	L–188	L–188 OPM
9377.	L–188	L–188 OPM
9378.	L–188	L–188 OPM
9379.	L–188	L–188 OPM
9380.	L–188	L–188 OPM
9381.	L–188	L–188 OPM
9382.	L–188	L–188 OPM
9383.	L–188	L–188 OPM

Item	Aircraft	Reference
9384.	L–188	L–188 OPM
9385.	L–188	L–188 OPM
9386.	L–188	L–188 OPM
9387.	L–188	L–188 OPM
9388.	L–188	L–188 OPM
9389.	L–188	L–188 OPM
9390.	L–188	L–188 OPM
9391.	L–188	L–188 OPM
9392.	L–188	L–188 OPM
9393.	L–188	L–188 OPM
9394.	L–188	L–188 OPM
9395.	L–188	L–188 OPM
9396.	L–188	L–188 OPM
9397.	L–188	L–188 OPM
9398.	L–188	L–188 OPM
9399.	L–188	L–188 OPM
9400.	L–188	L–188 OPM
9401.	L–188	L–188 OPM
9402.	L–188	L–188 OPM
9403.	L–188	L–188 OPM
9404.	L–188	L–188 OPM
9405.	L–188	L–188 OPM
9406.	L–188	L–188 OPM
9407.	L–188	L–188 OPM
9408.	L–188	L–188 OPM
9409.	L–188	L–188 OPM
9410.	L–188	L–188 OPM
9411.	L–188	L–188 OPM
9412.	L–188	L–188 OPM
9413.	L–188	L–188 OPM
9414.	L–188	L–188 OPM
9415.	L–188	L–188 OPM
9416.	L–188	L–188 OPM
9417.	L–188	L–188 OPM
9418.	L–188	L–188 OPM
9419.	L–188	L–188 OPM
9420.	L–188	L–188 OPM
9421.	L–188	L–188 OPM
9422.	L–188	L–188 OPM
9423.	L–188	L–188 OPM
9424.	L–188	L–188 OPM
9425.	L–188	L–188 OPM
9426.	L–188	L–188 OPM
9427.	L–188	L–188 OPM
9428.	L–188	L–188 OPM
9429.	L–188	L–188 OPM
9430.	L–188	L–188 OPM
9431.	L–188	L–188 OPM
9432.	L–188	L–188 OPM
9433.	L–188	L–188 OPM
9434.	L–188	L–188 OPM
9435.	L–188	L–188 OPM
9436.	L–188	L–188 OPM
9437.	L–188	L–188 OPM
9438.	L–188	L–188 OPM
9439.	L–188	L–188 OPM
9440.	L–188	L–188 OPM
9441.	L–188	L–188 OPM
9442.	L–188	L–188 OPM
9443.	L–188	L–188 OPM
9444.	L–188	L–188 OPM
9445.	L–188	L–188 OPM
9446.	L–188	L–188 OPM
9447.	L–188	L–188 OPM
9448.	L–188	L–188 OPM
9449.	L–188	L–188 OPM
9450.	L–188	L–188 OPM
9451.	L–188	L–188 OPM
9452.	L–188	L–188 OPM
9453.	L–188	L–188 OPM
9454.	L–188	L–188 OPM
9455.	L–188	L–188 OPM
9456.	L–188	L–188 OPM
9457.	L–188	L–188 OPM
9458.	L–188	L–188 OPM
9459.	L–188	L–188 OPM
9460.	L–188	L–188 OPM
9461.	L–188	L–188 OPM
9462.	L–188	L–188 OPM
9463.	L–188	L–188 OPM
9464.	L–188	L–188 OPM
9465.	L–188	L–188 OPM
9466.	L–188	L–188 OPM
9467.	L–188	L–188 OPM
9468.	L–188	L–188 OPM
9469.	L–188	L–188 OPM
9470.	L–188	L–188 OPM
9471.	L–188	L–188 OPM
9472.	L–188	L–188 OPM
9473.	L–188	L–188 OPM
9474.	L–188	L–188 OPM
9475.	L–188	L–188 OPM
9476.	L–188	L–188 OPM
9477.	L–188	L–188 OPM
9478.	L–188	L–188 OPM
9479.	L–188	L–188 OPM
9480.	L–188	L–188 OPM
9481.	L–188	L–188 OPM
9482.	L–188	L–188 OPM
9483.	L–188	L–188 OPM
9484.	L–188	L–188 OPM
9485.	L–188	L–188 OPM
9486.	L–188	L–188 OPM
9487.	L–188	L–188 OPM
9488.	L–188	L–188 OPM
9489.	L–188	L–188 OPM
9490.	L–188	L–188 OPM
9491.	L–188	L–188 OPM
9492.	L–188	L–188 OPM
9493.	L–188	L–188 OPM
9494.	L–188	L–188 OPM
9495.	L–188	L–188 OPM
9496.	L–188	L–188 OPM
9497.	L–188	L–188 OPM
9498.	L–188	L–188 OPM
9499.	L–188	L–188 OPM
9500.	L–188	L–188 OPM
9501.	L–188	L–188 OPM
9502.	L–188	L–188 OPM
9503.	L–188	L–188 OPM

Item	*Aircraft*	*Reference*
9504.	L–188	L–188 OPM
9505.	L–188	L–188 OPM
9506.	L–188	L–188 OPM
9507.	L–188	L–188 OPM
9508.	L–188	L–188 OPM
9509.	L–188	L–188 OPM
9510.	L–188	L–188 OPM
9511.	L–188	L–188 OPM
9512.	L–188	L–188 OPM
9513.	L–188	L–188 OPM
9514.	L–188	L–188 OPM
9515.	L–188	L–188 OPM
9516.	L–188	L–188 OPM
9517.	L–188	L–188 OPM
9518.	L–188	L–188 OPM
9519.	L–188	L–188 OPM
9520.	L–188	L–188 OPM
9521.	L–188	L–188 OPM
9522.	L–188	L–188 OPM
9523.	L–188	L–188 OPM
9524.	L–188	L–188 OPM
9525.	L–188	L–188 OPM
9526.	L–188	L–188 OPM
9527.	L–188	L–188 OPM
9528.	L–188	L–188 OPM
9529.	L–188	L–188 OPM
9530.	L–188	L–188 OPM
9531.	L–188	L–188 OPM
9532.	L–188	L–188 OPM
9533.	L–188	L–188 OPM
9534.	L–188	L–188 OPM
9535.	L–188	L–188 OPM
9536.	L–188	L–188 OPM
9537.	L–188	L–188 OPM
9538.	L–188	L–188 OPM
9539.	L–188	L–188 OPM
9540.	L–188	L–188 OPM
9541.	L–188	L–188 OPM
9542.	L–188	L–188 OPM
9543.	L–188	L–188 OPM
9544.	L–188	L–188 OPM
9545.	L–188	L–188 OPM
9546.	L–188	L–188 OPM
9547.	L–188	L–188 OPM
9548.	L–188	L–188 OPM
9549.	L–188	L–188 OPM
9550.	L–188	L–188 OPM
9551.	L–188	L–188 OPM
9552.	L–188	L–188 OPM
9553.	L–188	L–188 OPM
9554.	L–188	L–188 OPM
9555.	L–188	L–188 OPM
9556.	L–188	L–188 OPM
9557.	L–188	L–188 OPM
9558.	L–188	L–188 OPM
9559.	L–188	L–188 OPM
9560.	L–188	L–188 OPM
9561.	L–188	L–188 OPM
9562.	L–188	L–188 OPM
9563.	L–188	L–188 OPM
9564.	L–188	L–188 OPM
9565.	L–188	L–188 OPM
9566.	L–188	L–188 OPM
9567.	L–188	L–188 OPM
9568.	L–188	L–188 OPM
9569.	L–188	L–188 OPM
9570.	L–188	L–188 OPM
9571.	L–188	L–188 OPM
9572.	L–188	L–188 OPM
9573.	L–188	L–188 OPM
9574.	L–188	L–188 OPM
9575.	L–188	L–188 OPM
9576.	L–188	L–188 OPM
9577.	L–188	L–188 OPM
9578.	L–188	L–188 OPM
9579.	L–188	L–188 OPM
9580.	L–188	L–188 OPM
9581.	L–188	L–188 OPM
9582.	L–188	L–188 OPM
9583.	L–188	L–188 OPM
9584.	L–188	L–188 OPM
9585.	L–188	L–188 OPM
9586.	L–188	L–188 OPM
9587.	L–188	L–188 OPM
9588.	L–188	L–188 OPM
9589.	L–188	L–188 OPM
9590.	L–188	L–188 OPM
9591.	L–188	L–188 OPM
9592.	L–188	L–188 OPM
9593.	L–188	L–188 OPM
9594.	L–188	L–188 OPM
9595.	L–188	L–188 OPM
9596.	L–188	L–188 OPM
9597.	L–188	L–188 OPM
9598.	L–188	L–188 OPM
9599.	L–188	L–188 OPM
9600.	L–188	L–188 OPM
9601.	L–188	L–188 OPM
9602.	L–188	L–188 OPM
9603.	L–188	L–188 OPM
9604.	L–188	L–188 OPM
9605.	L–188	L–188 OPM
9606.	L–188	L–188 OPM
9607.	L–188	L–188 OPM
9608.	L–188	L–188 OPM
9609.	L–188	L–188 OPM
9610.	L–188	L–188 OPM
9611.	L–188	L–188 OPM
9612.	L–188	L–188 OPM
9613.	L–188	L–188 OPM
9614.	L–188	L–188 OPM
9615.	L–188	L–188 OPM
9616.	L–188	L–188 OPM
9617.	L–188	L–188 OPM
9618.	L–188	L–188 OPM
9619.	L–188	L–188 OPM
9620.	L–188	L–188 OPM
9621.	L–188	L–188 OPM
9622.	L–188	L–188 OPM
9623.	L–188	L–188 OPM

Item	Aircraft	Reference
9624.	L–188	L–188 OPM
9625.	L–188	L–188 OPM
9626.	L–188	AC 91–23A
9627.	L–188	AC 91–23A
9628.	L–188	AC 91–23A
9629.	L–188	L–188 OPM
9630.	L–188	L–188 OPM
9631.	L–188	AC 91–23A
9632.	L–188	AC 91–23A
9633.	L–188	AC 91–23A
9634.	L–188	AC 91–23A
9635.	L–188	AC 91–23A
9636.	L–188	AC 91–23A
9637.	L–188	AC 91–23A
9638.	L–188	AC 91–23A
9639.	L–188	AC 91–23A
9640.	L–188	L–188 OPM
9641.	L–188	AC 91–23A
9642.	L–188	AC 91–23A
9643.	L–188	AC 91–23A
9644.	L–188	AC 91–23A
9645.	L–188	AC 91–23A
9646.	L–188	AC 91–23A
9647.	DC–6	DC–6 OPM
9648.	DC–6	DC–6 OPM
9649.	DC–6	DC–6 OPM
9650.	DC–6	DC–6 OPM
9651.	DC–6	DC–6 OPM
9652.	DC–6	DC–6 OPM
9653.	DC–6	DC–6 OPM
9654.	DC–6	DC–6 OPM
9655.	DC–6	DC–6 OPM
9656.	DC–6	DC–6 OPM
9657.	DC–6	DC–6 OPM
9658.	DC–6	DC–6 OPM
9659.	DC–6	DC–6 OPM
9660.	DC–6	DC–6 OPM
9661.	DC–6	DC–6 OPM
9662.	DC–6	DC–6 OPM
9663.	DC–6	DC–6 OPM
9664.	DC–6	DC–6 OPM
9665.	DC–6	DC–6 OPM
9666.	DC–6	DC–6 OPM
9667.	DC–6	DC–6 OPM
9668.	DC–6	DC–6 OPM
9669.	DC–6	DC–6 OPM
9670.	DC–6	DC–6 OPM
9671.	DC–6	DC–6 OPM
9672.	DC–6	DC–6 OPM
9673.	DC–6	DC–6 OPM
9674.	DC–6	DC–6 OPM
9675.	DC–6	DC–6 OPM
9676.	DC–6	DC–6 OPM
9677.	DC–6	DC–6 OPM
9678.	DC–6	DC–6 OPM
9679.	DC–6	DC–6 OPM
9680.	DC–6	DC–6 OPM
9681.	DC–6	DC–6 OPM
9682.	DC–6	DC–6 OPM
9683.	DC–6	DC–6 OPM
9684.	DC–6	DC–6 OPM
9685.	DC–6	DC–6 OPM
9686.	DC–6	DC–6 OPM
9687.	DC–6	DC–6 OPM
9688.	DC–6	DC–6 OPM
9689.	DC–6	DC–6 OPM
9690.	DC–6	DC–6 OPM
9691.	DC–6	DC–6 OPM
9692.	DC–6	DC–6 OPM
9693.	DC–6	DC–6 OPM
9694.	DC–6	DC–6 OPM
9695.	DC–6	DC–6 OPM
9696.	DC–6	DC–6 OPM
9697.	DC–6	DC–6 OPM
9698.	DC–6	DC–6 OPM
9699.	DC–6	DC–6 OPM
9700.	DC–6	DC–6 OPM
9701.	DC–6	DC–6 OPM
9702.	DC–6	DC–6 OPM
9703.	DC–6	DC–6 OPM
9704.	DC–6	DC–6 OPM
9705.	DC–6	DC–6 OPM
9706.	DC–6	DC–6 OPM
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9708.	DC–6	DC–6 OPM
9709.	DC–6	DC–6 OPM
9710.	DC–6	DC–6 OPM
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9728.	DC–6	DC–6 OPM
9729.	DC–6	DC–6 OPM
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9732.	DC–6	DC–6 OPM
9733.	DC–6	DC–6 OPM
9734.	DC–6	DC–6 OPM
9735.	DC–6	DC–6 OPM
9736.	DC–6	DC–6 OPM
9737.	DC–6	DC–6 OPM
9738.	DC–6	DC–6 OPM
9739.	DC–6	DC–6 OPM
9740.	DC–6	DC–6 OPM
9741.	DC–6	DC–6 OPM
9742.	DC–6	DC–6 OPM
9743.	DC–6	DC–6 OPM

Item	*Aircraft*	*Reference*
9744.	DC–6	DC–6 OPM
9745.	DC–6	DC–6 OPM
9746.	DC–6	DC–6 OPM
9747.	DC–6	DC–6 OPM
9748.	DC–6	DC–6 OPM
9749.	DC–6	DC–6 OPM
9750.	DC–6	DC–6 OPM
9751.	DC–6	DC–6 OPM
9752.	DC–6	DC–6 OPM
9753.	DC–6	DC–6 OPM
9754.	DC–6	DC–6 OPM
9755.	DC–6	DC–6 OPM
9756.	DC–6	DC–6 OPM
9757.	DC–6	DC–6 OPM
9758.	DC–6	DC–6 OPM
9759.	DC–6	DC–6 OPM
9760.	DC–6	DC–6 OPM
9761.	DC–6	DC–6 OPM
9762.	DC–6	DC–6 OPM
9763.	DC–6	DC–6 OPM
9764.	DC–6	DC–6 OPM
9765.	DC–6	DC–6 OPM
9766.	DC–6	DC–6 OPM
9767.	DC–6	DC–6 OPM
9768.	DC–6	DC–6 OPM
9769.	DC–6	DC–6 OPM
9770.	DC–6	DC–6 OPM
9771.	DC–6	DC–6 OPM
9772.	DC–6	DC–6 OPM
9773.	DC–6	DC–6 OPM
9774.	DC–6	DC–6 OPM
9775.	DC–6	DC–6 OPM
9776.	DC–6	DC–6 OPM
9777.	DC–6	DC–6 OPM
9778.	DC–6	DC–6 OPM
9779.	DC–6	DC–6 OPM
9780.	DC–6	DC–6 OPM
9781.	DC–6	DC–6 OPM
9782.	DC–6	DC–6 OPM
9783.	DC–6	DC–6 OPM
9784.	DC–6	DC–6 OPM
9785.	DC–6	DC–6 OPM
9786.	DC–6	DC–6 OPM
9787.	DC–6	DC–6 OPM
9788.	DC–6	DC–6 OPM
9789.	DC–6	DC–6 OPM
9790.	DC–6	DC–6 OPM
9791.	DC–6	DC–6 OPM
9792.	DC–6	DC–6 OPM
9793.	DC–6	DC–6 OPM
9794.	DC–6	DC–6 OPM
9795.	DC–6	DC–6 OPM
9796.	DC–6	DC–6 OPM
9797.	DC–6	DC–6 OPM
9798.	DC–6	DC–6 OPM
9799.	DC–6	DC–6 OPM
9800.	DC–6	DC–6 OPM
9801.	DC–6	DC–6 OPM
9802.	DC–6	DC–6 OPM
9803.	DC–6	DC–6 OPM
9804.	DC–6	DC–6 OPM
9805.	DC–6	DC–6 OPM
9806.	DC–6	DC–6 OPM
9807.	DC–6	DC–6 OPM
9808.	DC–6	DC–6 OPM
9809.	DC–6	DC–6 OPM
9810.	DC–6	DC–6 OPM
9811.	DC–6	DC–6 OPM
9812.	DC–6	DC–6 OPM
9813.	DC–6	DC–6 OPM
9814.	DC–6	DC–6 OPM
9815.	DC–6	DC–6 OPM
9816.	DC–6	DC–6 OPM
9817.	DC–6	DC–6 OPM
9818.	DC–6	DC–6 OPM
9819.	DC–6	DC–6 OPM
9820.	DC–6	DC–6 OPM
9821.	DC–6	DC–6 OPM
9822.	DC–6	DC–6 OPM
9823.	DC–6	DC–6 OPM
9824.	DC–6	DC–6 OPM
9825.	DC–6	DC–6 OPM
9826.	DC–6	DC–6 OPM
9827.	DC–6	DC–6 OPM
9828.	DC–6	DC–6 OPM
9829.	DC–6	DC–6 OPM
9830.	DC–6	DC–6 OPM
9831.	DC–6	DC–6 OPM
9832.	DC–6	DC–6 OPM
9833.	DC–6	DC–6 OPM
9834.	DC–6	DC–6 OPM
9835.	DC–6	DC–6 OPM
9836.	DC–6	DC–6 OPM
9837.	DC–6	DC–6 OPM
9838.	DC–6	DC–6 OPM
9839.	DC–6	DC–6 OPM
9840.	DC–6	DC–6 OPM
9841.	DC–6	DC–6 OPM
9842.	DC–6	DC–6 OPM
9843.	DC–6	DC–6 OPM
9844.	DC–6	DC–6 OPM
9845.	DC–6	DC–6 OPM
9846.	DC–6	DC–6 OPM
9847.	DC–6	DC–6 OPM
9848.	DC–6	DC–6 OPM
9849.	DC–6	DC–6 OPM
9850.	DC–6	DC–6 OPM
9851.	DC–6	DC–6 OPM
9852.	DC–6	DC–6 OPM
9853.	DC–6	DC–6 OPM
9854.	DC–6	DC–6 OPM
9855.	DC–6	DC–6 OPM
9856.	DC–6	DC–6 OPM
9857.	DC–6	DC–6 OPM
9858.	DC–6	DC–6 OPM
9859.	DC–6	DC–6 OPM
9860.	DC–6	DC–6 OPM
9861.	DC–6	DC–6 OPM
9862.	DC–6	DC–6 OPM
9863.	DC–6	DC–6 OPM

Item	*Aircraft*	*Reference*
9864.	DC–6	DC–6 OPM
9865.	DC–6	DC–6 OPM
9866.	DC–6	DC–6 OPM
9867.	DC–6	DC–6 OPM
9868.	DC–6	DC–6 OPM
9869.	DC–6	DC–6 OPM
9870.	DC–6	DC–6 OPM
9871.	DC–6	DC–6 OPM
9872.	DC–6	DC–6 OPM
9873.	DC–6	DC–6 OPM
9874.	DC–6	DC–6 OPM
9875.	DC–6	DC–6 OPM
9876.	DC–6	DC–6 OPM
9877.	DC–6	DC–6 OPM
9878.	DC–6	DC–6 OPM
9879.	DC–6	DC–6 OPM
9880.	DC–6	DC–6 OPM
9881.	DC–6	DC–6 OPM
9882.	DC–6	DC–6 OPM
9883.	DC–6	DC–6 OPM
9884.	DC–6	DC–6 OPM
9885.	DC–6	DC–6 OPM
9886.	DC–6	DC–6 OPM
9887.	DC–6	DC–6 OPM
9888.	DC–6	DC–6 OPM
9889.	DC–6	DC–6 OPM
9890.	DC–6	DC–6 OPM
9891.	DC–6	DC–6 OPM
9892.	DC–6	DC–6 OPM
9893.	DC–6	DC–6 OPM
9894.	DC–6	DC–6 OPM
9895.	DC–6	AC 91–23A
9896.	DC–6	AC 91–23A
9897.	DC–6	AC 91–23A
9898.	DC–6	DC–6 OPM
9899.	DC–6	DC–6 OPM
9900.	DC–6	DC–6 OPM
9901.	DC–6	AC 91–23A
9902.	DC–6	AC 91–23A
9903.	DC–6	AC 91–23A
9904.	DC–6	AC 91–23A
9905.	DC–6	AC 91–23A
9906.	DC–6	AC 91–23A
9907.	DC–6	AC 91–23A
9908.	DC–6	AC 91–23A
9909.	DC–6	AC 91–23A
9910.	DC–6	AC 91–23A
9911.	DC–6	AC 91–23A
9912.	DC–6	AC 91–23A
9913.	DC–6	AC 91–23A

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